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THE UNIVERSITY OF ALBERTA

A COMPARISON OF THE CONTEXTUAL PROCESSING EFFICIENCY OF THE GRADE SIX STUDENT WITH HIS SEMANTIC SPACE

by

© GORDON ROBERT MICHON

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

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DEPARTMENT OF ELEMENTARY EDUCATION

EDMONTON, ALBERTA

SPRING, 1976

THE UNIVERSITY OF ALBERTA

FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "A COMPARISON OF THE CONTEXTUAL PROCESSING EFFICIENCY OF THE GRADE SIX STUDENT WITH HIS SEMANTIC SPACE", submitted by GORDON ROBERT MICHON in partial fulfilment of the requirements for the degree of Master of Education.

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ABSTRACT

The reader's processing of the context to attain word meaning involves a number of complex factors. Different readers are able to use the context with different levels of efficiency. One factor which may be closely associated with the efficiency of context use is the nature of the reader's semantic space or the various ways in which he organizes semantic relationships. In order to use the context, the reader must process the various semantic and syntactic clues in such a way so as to give meaning to a word so that it will be in agreement with the preceding and succeeding context. This ability may in part be the result of the reader's possession of certain dimensions along which logico-semantic categories or ways of ascribing meaning to words are found.

The sample consisted of the two groups of grade six students who had both been administered the Familiar Words Test and the Semantic Features Test. The two groups were established by considering the sixty students who scored highest on the Familiar Words Test as efficient processers of context and considering the sixty students who scored lowest on the Familiar Words Test as inefficient processers of context. The former was identified as the "high group", the latter as the "low group".

The investigation revealed that responses of both groups were similar although the high group tended to more closely resemble the responses of three adult models than did the low group. The responses of the high group tended to have a somewhat slightly higher preference for class membership categories while the low group preferred categories dealing with personal experience and immediate concrete associations. The use of a multi-dimensional scaling technique revealed no clear-cut differences although it seemed that the high group, when compared to the low group, had a semantic space consisting of dimensions which made use of categories of meaning requiring a degree of abstraction and class strategies whereas the low group was somewhat more given to depend on their immediate experience with a word.

The results of the study do not appear to indicate remarkable differences in the semantic spaces of the two groups studied. The ability of the reader to use the context is dependent on previously-established ways of ascribing meaning to words yet both groups had a semantic space not sufficiently dissimilar from one another to define one as sophisticated and mature and the other as unsophisticated and immature. The reader's ability to use the context may improve as he gradually is able to use his experiences to formulate more powerful organizations, yet the evidence of the present investigation was not sufficiently conclusive to prove this hypothesis.

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Chapter I

THE PROBLEM

INTRODUCTION

> ...context embraces more than merely the surrounding words and the manner of their utterance: in the last analysis it comprises the entire state of affairs at the time and the place of utterance and all that has led up to it -- at any rate, the cumulative consciousness of the state of affairs on the part of whoever is interpreting the meaning of symbols used (Solomon, 1966, p.50).

In the reading process, the acquisition of word meaning depends greatly upon the context within which the word in question falls. The reader's skill in using preceding and succeeding context as well as his ability to process the syntactic structures within which a word is found are very significant factors. In addition, the wide range of life experiences of the reader, to the extent they interact with those of the author, form a contextual element crucial to the acquisition of meaning. In order to appreciate fully the constraint value of the context, one must take into account as many of the facets of language as possible which define the context. The cloze technique yields a quantitative analysis of the efficiency with which the reader is able to use context to gain word meaning. Previous investigations using this technique have shown that

reader efficiency in using context is indeed a factor in the acquisition of word meaning and that certain readers process context more efficiently than others. An immediately apparent limitation of this method is that word meaning is poorly measured if it is simply scored in a "right-wrong" manner.

If the constraint value of the context, as one aid in the acquisition of word meaning, is composed of a number of different elements, the "quality" of the word chosen by a reader on a cloze test is dependent on the "efficiency" with which he takes into account these many elements. Given that reading is a reconstruction process, "meaning" is better measured in a qualitative rather than a quantitative manner as it better identifies the degree to which the reconstructive process has been carried out.

Laing (1974) in a study of the contextual processing efficiency of maturing readers identified four qualitative levels of word meaning which are indicative of the efficiency with which these readers were able to process the context. Except for this study, little else has been done dealing with the quality of word meaning achieved by a reader by use of the context.

Other studies of the quality of word meaning have indicated that the ability of a language user to ascribe meaning to words is based largely on his semantic organization. Evanechko (1970) indicated that meaning

results from the organism's behavior in interpreting environmental stimuli. In his study he identified twenty-four logico-semantic categories which, based on each individual's personal experiences, combined in a unique fashion to define the way in which a person would attribute meaning to words. These categories were grouped along different dimensions which formed a multi-dimensional "semantic space". When a person encountered a word, this word would impinge upon his "space" and result in projections upon certain of the dimensions which defined the space. It was the composition of these dimensions which determined the quality of meaning which a person was able to give to a word.

It may be that the reader's ability to process the context to gain word meaning is influenced by his possession of the logico-semantic categories arranged in an appropriate way to give meaning to words. The reader's sensitivity to the many ways in which the language is arranged in the context may be dependent on similar arrangements existing within his "semantic space". From this point of view, contextual processing and meaning ascription are antithetical. The former process attempts to recover a word by gathering as much information as accurately as possible, the latter begins with a word and attempts to give it meaning using different meaning categories.

A potentially very fruitful area of research is the investigation of the relationship between the reader's ability to utilize the context and the composition of the reader's "semantic space".

PURPOSE OF THE STUDY

The purpose of this study is to examine one of the factors which might influence the efficient use of the context. Specifically the study will attempt to explore the relationship, if any, between the grade six reader's "semantic space" and his efficiency in obtaining meaning from the context.

DEFINITION OF TERMS

For the purposes of this study the following definitions will be used.

Context -- refers to the parts of the written discourse which surround a word and which govern the interpretation of the word (Laing, 1974).

Familiar word -- any word used in the first column of the Thorndike and Lorge (1944) word list having a frequency of occurrence of twenty times or more per million words (Laing, 1974).

F.W. Test - The Familiar Word Test of Sentences and Paragraphs adapted for this study from Laing (1974).

Unfamiliar word -- any word the student is unable to define on the Stanford-Binet Vocabulary Test.

U.F.W. Test - The Unfamiliar Word Test of Sentences and Paragraphs -- an instrument devised by Laing (1974) but not used in the present study.

High group -- those students who made high scores on the F.W. Test.

Low group -- those students who made low scores on the F.W. Test.

S.F. Test - The Semantic Features Test -- an instrument constructed to chart the dimensions of children's meaning spaces by the use of a forced choice comparison technique in which twenty-four logico-semantic meaning categories are paried one with each other.

Semantic Space -- an n-dimensional space taken to identify the individual's verbal mediating responses and to describe the process or strategy applied by the individual in the assigning of meaning to verbal data (Evanechko, 1970).

RESEARCH QUESTION AND HYPOTHESIS

A research question in keeping with the purpose of the study was formulated. An empirical analysis of this question was pursued through a null hypothesis.

Research Question

Is there a relationship between the contextual processing efficiency of learners as expressed by their scores on the F.W. Test and their semantic sophistication as expressed by their responses to the S.F. Test?

Hypothesis

Learners who score low on contextual processing efficiency (as expressed by their response to the F.W. Test) do not differ significantly from those who score high with regard to their semantic sophistication as expressed by their responses to the S.F. Test.

DESIGN OF THE STUDY

A sample of 158 grade six students was chosen from among seven heterogeneously grouped grade six classrooms in four schools in the Edmonton Public School System. All of the students present in these classrooms were administered both the Familiar Words Test of Sentences and Paragraphs (Laing, 1974) and the Semantic Features Test (Evanechko, 1970) on the mornings of two consecutive school days in May, 1975. All students were then screened to ensure they possessed at least a grade four reading level as determined by the May, 1975

reading tests which had recently been administered throughout the system. Those students whose reading level was below grade four, the designated reading level of both test instruments, were eliminated from the study. In addition, those students who were unable to complete both instruments due to absenteeism on one of the testing days or who did not follow the test instructions were eliminated from the study.

The remaining F.W. Tests were scored according to Laing's (1974) criteria. The sixty students who scored most highly were chosen as being representative of readers who were efficient processers of the context. For convenience they were labeled as the "high group". The sixty students who scored the lowest were selected as a second group thought to represent readers who were inefficient processers of the context. They were labeled the "low group" throughout the study. The results of both groups were subjected to a "t-test" to ensure their independence.

The S.F. Tests corresponding to the two groups were subjected to an item analysis. In addition a matrices of proportion was constructed and each group was analysed in terms of the Shepard-Kruskal Multidimensional Scaling Technique. Comparisons were then made between groups.

ASSUMPTIONS OF THE STUDY

The study was carried out with the following underlying assumptions.

That the F.W. Test of Sentences and Paragraphs developed by Laing (1974) and valid and reliable for her population will be valid and reliable for the population of this study.

That the S.F. Test developed by Evanechko (1970) and valid and reliable for his population will be valid and reliable for the population of this study.

That the scores obtained from the May reading tests administered system-wide by the Edmonton Public School Board will be an accurate assessment of the students' reading ability.

LIMITATIONS OF THE STUDY

The following limitations were noted. The generalizability of the conclusions of the study are therefore subject to the following limits.

The experimental population, chosen from one school system in one area of Edmonton, is limited to 158 grade six students from "normal" classrooms and does not include children from "special" classes.

Both instruments, the F.W. Test and the S.F. Test create a somewhat artificial reading situation when compared to the normal reading situation.

The S.F. Test is only one measure of the way in which children can ascribe meaning to concepts.

The F.W. Test is a limited measure of the contextual processing of a reader as it does not take into account such variables as syntax.

A number of variables such as intelligence, verbal fluency, vocabulary development, experiential background and previous instruction were not controlled for in the study.

The reading test scores used in the study were derived from group tests expressed as percentile scores and may not have been as accurate as if individual tests had been administered and expressed in grade levels using local norms.

SIGNIFICANCE OF THE STUDY

The study will have no direct classroom applicability. It is meant to serve as a bridge between the theoretical investigations of reader use of context and the studies dealing with the composition of his "semantic space". A possible interpretation of this information in a classroom setting will be made as a result of relationships established between the two.

If the present research indicates that a relationship exists between a child's efficient processing of the context and his possession of a sophisticated or mature

"semantic space", one can then ask if a child's reading could be improved by developing strategies used to give meaning to concepts. This will be brought about by the teacher's selection of learning activities based on hierarchical components of meaning response which will increase the sophistication of the student's "semantic space".

If the present research indicates that a relationship exists between a child's efficiency in the processing of context and the make-up of the dimensions of his "semantic space" it may serve as an impetus for research into similar areas of study dealing with the integration of the language arts of reading and language.

ORGANIZATION OF THE STUDY

In Chapter I the problem was identified and the study was outlined. Chapter II contains a review of the relevant literature, first that research and those studies dealing with reader use of the context, second, that theoretical and experimental literature dealing with the development of a meaning vocabulary. Chapter III describes the sample, the testing instruments and procedures, the method of analysis of student responses and the statistical procedures. The results of the analysis of the data and their interpretation are presented in Chapter IV. The conclusions and implications as well as a summary of the study are found in Chapter V.

Chapter 2

REVIEW OF THE LITERATURE

INTRODUCTION

The review of the literature is divided into two main sections dealing with research related to the study. The first part of the chapter concerns itself with the research related to the study of the use of context in the reading process. This section is discussed under the following headings: (1) Nature of context and its relationship to the reading process, (2) Types of studies on context, (3) Aspects of the context that provide word meaning, and (4) Factors which affect the efficiency of the use of context.

The second part of the chapter deals with research in the field of vocabulary development. This section is discussed under the following headings: (1) Word meaning, (2) Qualitative analysis of word meaning, and (3) Semantic space.

Following these two larger sections there will be found a section dealing with the intended focus of the study.

CONTEXT STUDIES

Nature of Context and Its Relationship to the Reading Process

Context has always been of fundamental concern to students of perception. The term "context" when used to refer to human perception has been described by Titchener (Allport, 1955) in his core-context theory as playing a central role in man's acquisition of meaning. For Titchener, human perception involved the integration and consolidation of a number of sensations into a group. One group of these sensations becomes focal and forms the core. The accompanying sensations, those which one did not choose to make focal, are the context. In order to make the core meaningful one must also perceive the context. In this sense the context is the meaning. Words on a printed page therefore alternate between being the core and the context which provides meaning for the core.

Rather than use the term "context", Allport (1955) has chosen to use the word "structure" to account for man's perception of objects and their surroundings. He sees the core or focal perception as the "inside structure" and the context or proximate perceptions as the "outside structure". Using the example of "a woman carrying a plant to a sick friend at the hospital" to illustrate this point, he feels one can simultaneously gain meaning from the inside structure (the plant) and the outside structure (the movement of the plant). In this sense perceptions involve

successive nests of contexts embedded within one another and accessible simultaneously to the perceiver who has had an adequate learning history to enable him to perceive them as meaningfully related and not simply as extraneous sensations.

A concern for the importance of context is found in contemporary theories of perceptual learning such as the cognitive theory of Bruner (1956). For Bruner, perception is a problem-solving activity which involves an act of categorization. How a person behaves in a situation depends on what that situation means or signifies to him. By isolating certain significant stimuli or cues, the perceiver is able to identify the category of the object perceived. He is thus able to place it in a context which gives it meaning to himself. The process of matching a stimulus input with the categories or associations one has already made with similar objects suggests that perception is a problem-solving activity in which context plays an important role.

As a child learns to attach symbols to his perceptions of reality in the form of oral language, he becomes aware of meaning as residing in the sequence in which an utterance is received as well as in individual words. His language development involves the parallel growth of vocabulary and syntax, the development of a knowledge of words and the way in which words have meaning in combination with one another. The child will thus quickly understand

the difference in meaning between the utterances "the dog bit the boy" and "the boy bit the dog", although both contain the same individual word forms.

The importance of context to the understanding of language is further stressed by Vygotsky (1962):

> A word in context means both more and less than the word in isolation; more, because it acquires a new context, less because its meaning is limited and narrowed by the context (p. 51).

Church (1965) points out that much of a child's awareness that language depends on a knowledge of syntax is learned early in his development. At one point, this new found knowledge of these rules is shown by his inflexible use of newly acquired grammatical rules which are unable to account for exceptions to the rule:

> He [the child] may initially pick up concretely, for instance, the forms "I bring - I brought". Then as he begins speaking according to rules, he shifts to such forms as "I bringed" and even "I broughted" (Church, 1965, p. 64).

In addition the child may misplace affixes such as "He pick it up" and "I walk homed". Such ungrammatical responses point out the gradual development of the child's awareness of language as composed of individual words made meaningful by their relationship to one another -- their context.

In the reading process, the place of context is crucial. It is important both for immediate comprehension of the passage at hand but also in the development of a

reading vocabulary which will lead to a higher level of reading skill in the future. McCullough (1958) makes this point in calling for more investigation into the area and more classroom instruction on the use of context:

> Until we begin to define this area [context aids] of learning and to make it a part of a continuous developmental program, until we begin to teach the techniques as well as require their use, the whole matter of comprehension must flounder (p. 229).

Goodman (1970) views the reading process as the reconstruction of an author's meaning. Originally the author begins with a meaning or a deep structure which he wishes to communicate. By employing a number of mandatory and optional transformational rules he transforms the idea into a communicable written form or a surface structure. Print form presents the reader with only the surface structure. The reader must now process these graphic cues and transform them into the deep structure originally intended by the author. To do this he samples the graphic display, makes predictions regarding its meaning, then tests and confirms these predictions. Because the reconstruction of an author's meaning is accomplished by the reader bringing his own previous learning to the reading situation, it is not necessary that all of the information the author has provided be used. The reader rather, samples the three cue systems provided, which Goodman refers to as the graphophonic, syntactic and semantic cue systems.

The graphophonic cue system refers to the print on the page. Whereas a person learning to read may have to attend to a large percentage of letters in each word, in time he is able to make use of contextual constraints which help reconstruct author meaning and require far fewer such cues. In some cases as little as the initial consonant may be adequate. If the reader has had the type of life experiences which closely parallel those expressed by the author and if the language experience of the reader is similar to that of the author, he is able to bring more to the printed page and therefore will need to take away less from the page in the form of graphophonic cues in order to reconstruct the author's meaning.

Emans (1969) uses the following sample to illustrate this point:

> Becky and her mother wanted to go shopping.
> They climbed into the _____
> to go to the store (p. 76).

Because of the child's life experiences he will be able to limit the possible words that will fit into the blank to things which can be used for transportation and which can be "climbed into", namely: car, automobile, bus, streetcar or truck. Given the limit of these possibilities the reader need now only make use of a small amount of graphic information to identify the word.

The syntactic cue system refers to the grammatical rules the author has used to express his thought. The

reader's ability to use cues such as function words or inflectional suffixes allows him to make predictions about the deep structure of the passage. Just as with the grapho-phonic cue system, the reader will make use of as few syntactic cues as is possible to obtain meaning thus increasing the efficiency of his reading by reducing the cognitive and perceptual demands of this part of the reading process. The reader's knowledge of syntax results in his knowing when to look for certain markers which change the sense of the passage and what to expect from such markers. An efficient use of the syntactic cue system also reduces the amount of sampling required in the graphophonic cue system.

The semantic cue system refers to the meaning which is symbolized in words and combinations of words. The reader's ability to bring to the reading situation a sophisticated vocabulary based on sufficient experience and conceptual background makes it far easier to reconstruct author meaning and evaluate and make judgements on what has been written. In this situation, the social and literary context within which a passage has been written is crucial to understanding.

The extent to which the reader makes use of these three cue systems changes as the reader matures. During the early stages of learning to read there is a greater dependence on the graphophonic cues but in time as

knowledge of syntax and semantics increases, the reader is able to make a trade-off and reduce the amount of graphic intake in favor of the contextual constraints provided by the semantic and syntactic cue systems. It is only after an adequate skill has been developed in abstracting graphic information that the reader can gain meaning by means of the other two systems.

Biemiller (1970) found that beginning readers were characterized by a tendency to use information gained aurally to overcome a weakness in dealing with graphic information. Such readers often learned to make use of sequences of words which occurred frequently in the text and then restricted their response to words they had been taught and the use of syntactic and semantic cues in their language. In such cases the use of aurally obtained information by paired associations inhibited reading development. If the child used one word correctly by using the graphic information, he would use this and the contextual aids in the text and guess at the next two or three words. The result of this was often contextually correct errors.

As the student gained a greater understanding of the importance and use of graphic information, he would for a time not respond to many words. This behavior was the result of a realization that one must account for the graphic information when reading. At this point, however,

the student did not possess adequate phonic skills to attack the words.

During the third stage, after the child had acquired a greater control over the graphic cues, he would make use of both graphic and contextual cues to gain word meaning. This stage was characterized by an equal number of graphically and contextually constrained errors. Biemiller found that poor readers were characterized by a prolonged dependency on the context as a way to avoid using graphic information. Those readers were distinguished by a slower rate of progression through the three stages he described.

As the reader matures and is able to bring more life experiences and language knowledge to the reading situation, his sampling of cues from the printed page becomes more selective. His ability to use the context efficiently results from his increased ability to match his repertoire of personal experience with the intended meaning of the author. For the proficient reader then, it is evident that the function of the context in the reading situation is a very complex one indeed.

Stauffer (1969) defined reading as a thinking process. He felt that this involved three stages. These were, firstly, a declaration of the purpose for reading the passage, secondly, a reasoning process consisting of a balancing of what was found against purposes and experiences and thirdly, the making of judgements by the

reader regarding the passage read. Each of these steps demand that the reader remain sensitive to the contextual constraints of the passage itself as well as the social and psychological context within which it has been written.

Types of Investigations of Context

Reading experts have classified studies on context in reading in a number of different ways. Aulles (1970) has outlined an historical development of research in this area which has been marked by a movement away from informed opinion toward more empirical evidence on the subject.

The earlier stages of concern with context in reading occurred previous to 1940. During this time journal articles and reading texts stressed the importance of context to reading. The insights gained were based largely on introspective analyses of the operation of context. Often context was conceptualized as some specified segment of printed language which provided clues that the reader uses to determine meaning.

Thorndike (1917) emphasized the need for research into the area of reading when he wrote:

> ...little attention has been paid to the dynamics whereby a series of words whose meanings are known singly produces knowledge of meaning of a sentence or a paragraph (p. 324).

In the same article he goes on to offer an explanation of how good readers solved reading problems by attaching meaning to each word encountered, then selected certain

elements in the context and determined the relationship between these elements or cues by weighing each properly in order to organize essential ideas and make possible understanding of sentences and paragraphs.

Chambers (1904) likewise lay great stress on the importance of the context in the acquisition of word meaning. He notes that:

> The commonest and perhaps the best way to promote growth of content in word meanings is to allow the child to infer the meaning from the content. ...So long as the number of the new words is small, and their use in context is sufficiently varied, there will be little trouble for the pupils in getting the sense (p.16).

Further statements stressing the important role occupied by the context in the reading process have been made by Dolch (1931), Gates (1935) and Gray (1940).

The second stage, lasting from 1940 until 1965, was marked by an attempt on the part of reading experts to identify specific context clues which could be used by the classroom teacher for reading instruction. Using largely unpublished research, reading experts during this period stressed the importance of context clues and urged their greater use in the classroom. Artley (1943) and McCullough (1943) drew up lists of context clues they felt would be helpful to the teacher.

Artley (1943) defined ten individual context clues, many of which were further subdivided into specific examples of the clue. Although he was aware that many of

these clues would overlap in a classroom reading situation, he felt their isolation was helpful for instructional purposes.

McCullough (1943) identified seven different contextual clues which were based on previous unpublished research. In addition to the designation of specific context clues, the article served as a call to other educators to "disentangle the context clue from the larger consideration of semantics and study it directly with students of all reading levels" (p. 143).

Seibert (1945) asked students to infer missing words from a reading passage in which many words had been omitted. Without asking her subjects how they arrived at their answer she constructed four categories which she felt accounted for the contextual aids and strategies used by her subjects.

Deighton (1959) formulated a series of contextual aides based on a study of 500,000 running words. Although able to identify a number of specific clues, Deighton felt that the infrequency of their occurrence reduced their usefulness in identifying unfamiliar words in an ordinary reading situation.

In all, a total of thirty-six contextual clues were identified by various authors during this period of time. Because of the variety of clue categories, different response measures and various characteristics of sample

populations as well as the different conditions under which they were selected, no cohesive objective statement was possible regarding contextual clues. Aulles (1970) points out that there was often a conflict as to the degree to which students in a single grade level were able to make use of context aids.

Ames (1965) conducted the first empirical study of context clues. Using twelve graduate students responding to twenty reading passages he asked each student to explain what aids in the context they used to identify each of the 556 nonsense words which had been used to replace adjectives, adverbs, nouns and verbs spaced every fiftieth word in the passage. A total of thirty-six clues were listed from which a classification system of thirteen clues was devised to account for those clues found most commonly among the group. Although the eventual goal was the creation of new instructional materials, Ames stressed the need for more research prior to such an undertaking.

Quealy (1969) replicated Ames' study with a group of high school students and found the classification system of the original study to be reliable.

Rankin and Overholser (1969) investigated the use of twelve out of the thirteen context clues identified by Ames on students in grades four, five and six. They found a significant range of difficulty for the individual clues which ranged from 26% success with some clues to 69%

success with others. They found that the clues which were difficult for students at a lower grade level were also the most difficult for students at a higher grade level.

Dulin (1968) devised a five-type classification system of contextual devices which included; contrast, linked synonyms and/or appositives, direct description, language experience, and cause and effect. These devices were tested on four hundred grade ten students in a five-form test in which students were required to identify the meaning of a nonsense word in a short paragraph by selecting the appropriate word from five possible multiple choice responses. It was found that the classification was valid and that significant differences existed between three of the five devices.

The manner in which the reader processes the context to gain meaning has been investigated in a number of different ways. The use of multiple choice questions has been used by investigators such as Dulin (1968). This method has been found to be limited in that it does not represent a normal reading situation because the multiple choice questions may provide response information apart from that imparted by the context clue. There is no way of telling if it is the clue or the series of questions that provide the answer. In addition, reader knowledge of a word in the passage which is to be defined by the context inhibits the specification of contextual constraint. To

overcome this, nonsense words are often substituted.

The cloze procedure has proven to be a very efficient and useful means of studying the constraint value of the context. By the deletion of individual words or the substitution of nonsense words for individual words, the investigator is able to decide on how many words will precede and succeed the deleted or nonsense word. He is also able to decide how many words will occur between deletions, what part of the sentence the deletion or nonsense word will occur in, and whether the deletion or nonsense word will be an adjective, adverb, noun, verb or function word. In addition he is able to embed a specific context clue in different parts of the sentence relative to the deleted or nonsense word.

The limitations of using the cloze technique in the study of contextual constraint are that one is never certain what part of the context is being used by the reader to gain meaning. In the case of Ames (1965) there were one hundred words surrounding each nonsense word which may have been helpful in a number of ways in contributing meaning. Specificity is difficult. Syntactic influences, location of deletions, difficulty of words deleted, number of words between deletions, and writing style all act as variables. To base a study on the influence of one variable without controlling for the others limits the research.

The way in which a person acquires word meaning from the context is not directly observable. We must infer this behavior from his response. The use of the introspective technique has been used by several authors in an attempt to shed light on this area (Werner and Kaplan, 1950; Ames, 1966; Quealy, 1969; Laing, 1974).

In the case of Ames and Quealy, subjects were simply asked to identify that part of the context which aided them in obtaining the meaning of the nonsense word. Laing (1974), investigating the way in which maturing readers in grades four, six and eight made use of the context to gain meaning, did not ask the subjects what part of the context they used but rather simply asked them to decide upon a word of "best fit" to complete the meaning of the context. They were then asked to explain why they had used that word to replace the deleted word. The advantage of this use of the introspective technique was that it got at the thinking process used by the child as well as a specification of the contextual clue used.

One common way of classifying context studies has been according to the function the author sees the context serving in the reading process. These two functions are word attack and comprehension.

The role played by the context in reading is extensive enough that it is impossible for context to serve one or the other function. There is however, as Aulles

(1970) points out, a bias found in the way in which a reading specialist conceptualizes the nature of context that "is ultimately reflected in the teaching methods selected for classroom and remedial teachers" (p. 62). Typically word attack proponents have viewed the context as consisting essentially of the words in the text whereas proponents of the comprehension have tended to include within their definition of context the total range of experiences the reader is able to bring to the reading situation.

Emans (1969) has a word attack orientation to context study. He lists four uses of context clues in word recognition. These are: as aids to remembering words, as checks on the accuracy of words tentatively identified, as aids to the rapid recognition of words, and as aids in the correct identification of some words. Emans also categorizes the various context clues useful to word recognition into three main categories. These are: meaning-bearing clues, language-bearing clues, and organizational clues.

McCullough (1943, 1958, 1959) lays heavy stress on the use of the contextual devices in gaining meaning. "An obvious purpose for being interested in contextual aids in reading" according to McCullough (1958) is to "determine the meaning of a word whose sense, for one reason or another, presents a problem" (p. 225). In these articles she lists context clues, gives examples and points out how these clues properly understood can act as an adjunct to the acquisition

of word meaning.

Aspects of the Context That Provide Meaning

The constraint value of a passage consists of those semantic and syntactic features in the text which the reader is able to use as stimuli in ordering his own language knowledge and experiential background to reconstruct author meaning. Because of the complexity of this process there remain many questions requiring investigation. One such question concerns the amount of constraint value existing within the context the reader has used in making his judgements. Another question which is largely unresolved deals with the relationship of the amount of meaning the reader derived from the context with the degree of textual constraint used. A third problem in this area concerns the accurate measurement of meaning derived from the context. Laing (1974) found that even with bizarre responses there was no certainty that the context had not been used to some extent.

In this section mention will be made of five variables which various researchers have identified and investigated for their contextual constraint value. Collectively these variables suggest that the successful use of the context is dependent on the efficiency with which the reader is able to process them so as to reconstruct as close as possible original author meaning.

The most frequently studied constraint variable has been the context clue. Rankin and Overholser (1969) point out that between 1943 and 1965 no fewer than thirty-six contextual clues have been identified. Authors specifically mentioning context clues have been mentioned earlier in the study (see chapter 2 page 21).

Laing (1974) found that, in addition to identifying specific embedded clues, her subjects named other parts of the context as helping them identify a deleted word. These other parts of the context consisted of individual words, phrases, clauses or function words. These she referred to as "meaning clues". In one sentence, six such clues were identified. Findings such as these point out the difficulty in making statements on the constraint value of one specific context clue.

Word form class has been a specifiable part of the context which has been found helpful to readers in gaining word meaning. The most common forms studied have been nouns, verbs, adjectives and adverbs. In addition function words have been identified and investigated for their constraint value.

Ames (1965), using graduate students as subjects, found verbs (69%) to yield the highest degree of constraint value. This was followed by adjectives (67%), nouns (60%), and adjectives (48%).

Quealy (1969) replicated Ames' study using high school students and found that the constraint value of the four class words differed significantly between one another. There were also found to be significant differences among the three intellectual ability levels in the percentage of correctly identified form class words.

Laing (1974) in addition to studying the above four word form classes, studied the constraint value of six selected function words. The ability of the various grade levels to use these words ranged from thirty per cent in grade four to sixty-one per cent in grade eight. Subjects' responses suggested that their limited use of these function words was because of a lack of adequate conceptual knowledge of the important words which were connected by a particular function word. Background experience here seemed to be the key influencing factor. Position in the sentence was also found to have some bearing on the reader's ability to use function words.

Studies in syntax reveal that a reader's understanding of a passage is dependent upon the complexity of the language used. Bormuth (1966) points out that failure of children and adults to understand what they read is often not the result of overly difficult concepts or the lack of adequate decoding skills; rather it is a result of the complexity of certain language patterns. Both Fagan (1969) and Cosens (1974) attempted to investigate the relationship of language complexity and reading by

defining specific transformational structures and investigating the extent to which their presence in written language influenced reading comprehension. These studies both suggest a high correlation between language complexity and difficulty in reading.

Researchers such as Danks (1970), Bobbrow (1970) and Perfetti (1969) have found that as different semantic units (words, phrases or sentences) are manipulated, their constraint value within the passage changes. In general this research has pointed out that meaning is carried in all of these units and that a reader's ability to gain this meaning varies with the way these units vary.

Factors Which Affect Reader Use of Context

The ability of the reader to use the context has been found to be related to, among other things, past experience, age level, classroom instruction and vocabulary development.

Experience refers to those specific life experiences which the reader has been able to retain in a form which enable him to make use of them in the reading situation. Both Artley (1943) and McCullough (1943) stress the importance of the reader's experience to insure an efficient use of context. They both list background experience as contextual aids in formulating lists of clues the teacher can use in planning her lessons on context. In both cases it is stressed that in the absence of adequate background

experience on the part of the students, "the teacher must supply the basis for understanding through excursions, field-trips, pictures, films, slides, museum exhibits, models and the like" (Artley, 1943, p. 71).

Rankin and Overholser (1969) cite past experience as the third most frequent type of contextual clue listed by seven authorities they studied.

Laing (1974) found that the tendency for differences in the quality of word meaning derived from the context decreased by grade level. This suggested that the acquisition of background experience and a growing language power led to "more efficient use of thinking power in the processing of context" (p. 369).

Very closely associated with the factor of experience is the factor of age, which is most often expressed as a grade level in school. This is inseparably bound to other factors such as experience, verbal meaning and judgement.

Gibbons (1940) found that college students used context to derive word meaning 48 per cent of the time. Ames (1965) found doctoral students to use context successfully 60 per cent of the time. Quealy (1969) using high school students found the level to be 42 per cent. Rankin and Overholser (1969), when investigating context use of grades four, five, and six, found the percentage of correct answers to be 43, 53 and 63 per cent respectively. Laing

(1974) found an increase in contextual processing efficiency of grades four, six and eight students to increase with age and grade level.

Quealy (1969) found no significant difference in the contextual processing ability of grade ten, eleven and twelve students. An argument put forward to explain this was that at this age level factors such as intelligence or language experience become more influential than age level.

Much of the writing and research in the area of context has been motivated by a felt need to initiate or improve instructional procedures dealing with reader use of contextual constraint.

Hafner (1965) was unable to find any significant difference in the ability of grade five students to use context after one month of instruction. Guarnino (1959) found certain gains in the ability of students who scored poorly on the context pre-test but who scored highly on the comprehension pre-test.

For the most part, articles dealing with context instruction have not had scientific controls. Roody (1953) and Siebert (1945) have given illustrations of lessons which have attempted to teach context without attempting to measure the influence of the lesson. Other authors such as Butler (1943), Hafner (1965), Peterson (1943) and Guarnino (1959), studying the value of the clues in an instructional setting, have reported positive results or expected that

such would occur if the training period was of an adequate length.

Vocabulary level has long been regarded as a factor significantly influencing the reader's ability to process the context to derive meaning. In the following section specific attention will be made with regard to vocabulary and vocabulary development.

VOCABULARY STUDIES

Word Meaning

The problem of meaning has been a perennial concern of educators. One specific aspect of research in this field has dealt with attempting to explain how a non-physical entity such as meaning comes to be related to an arbitrarily-constructed symbol such as a word. Numerous theories have been constructed to explain "the meaning of meaning". One such theory which takes into account many earlier theories was devised by Osgood (1957). In it, meaning is conceived of as a "representational mediation process".

Initially the child experiences an undifferentiated environment which he slowly begins to differentiate. He is able to designate a part of the reality as separable units (reality which in time he is able to fix with words). The words for the child represent significates or "stimuli which in a given situation, regularly and reliably produce

a predictable pattern of behavior" (Osgood, 1957, p. 6).

Meaning is thought to be "representational" because the word in some way comes to produce the same behavior as the significate. The word "steak", for example, when expressed in verbal or written form, tends to elicit an approximation of the behavior, either physical or mental, as would an actual perception of a steak.

Meaning is thought to be "mediational" because the organism upon receiving the symbol is able to associate this symbol with a variety of other events and situations. In this one meaning is an active process engaged in by the organism who gives meaning to a word or symbol. The meaning of the word "tree" for example depends upon what meaning is attributed to it or what sort of mediation process occurs between the organism and the symbol. For a lumberman the meaning of "tree" may be found in its market value, whereas for the artist "tree" may mean some combination of aesthetic qualities.

A word can be said to have meaning because it has been associated with a significate in some past time and in some fractional way represents a response not produced by other words. The representative aspect of meaning described by Osgood (1957) was expressed diagrammatically some years earlier by Ogden and Richards (1956). (See figure 2.1.)

In this diagram the three components involved in making a statement are placed at three corners of a triangle

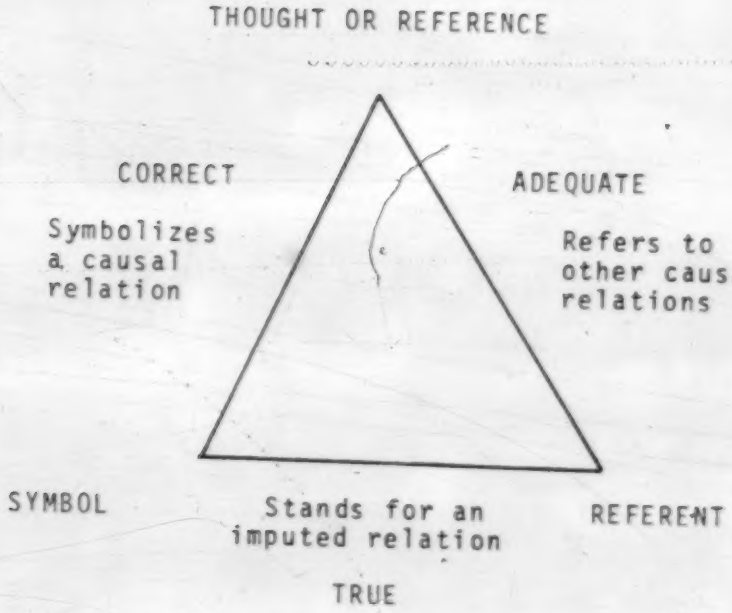

FIG. 2.1 MODEL OF THE RELATIONS BETWEEN WORDS AND THINGS (Ogden and Richards, 1956, p. 11)

with the relationship between them referred to on the line joining the components. The relation between a symbol and a thought is said to be a causal relation because the symbol is caused by the thought or reference as well as the sociological and psychological influences that have contributed to form the strategies of signification used by the speaker.

The thought and the referent are in a direct relationship in that the direct experience of an object evokes a response not mediated by a symbolic representation. The learning history of the individual will influence the way in which he reacts to the referent. Should that

referent be of an abstract nature the relationship between it and the thought tends to become more indirect as it may depend on a long chain of sign-situations intervening between the act and its referent (Ogden and Richards, 1956, pp. 10-11).

The relation between a symbol and a referent is an indirect one which consists of the use someone has made of a symbol to stand for a referent. The relation is an imputed one because only indirectly round the other two sides of the triangle are they connected.

The meanings which different individuals have for the same symbol varies with the nature of the behavior occurring while the sign was being established. Some symbols involving primary perceptual signs typically are constant for all individuals. The word "apple" for example is generally given a consistent meaning by many people. Other symbols, however, because of the degree to which they depend on personal experience, have meaning which is unique to the person processing the sign. The meaning of the word "father", as an example, would vary depending on the experiences of the person while the sign was being established (Osgood, 1957, p. 8).

The greatest variation in meaning occurs in words which have been assigned their meaning by an association with other signs rather than by direct association with the object the sign refers to.

Words symbolizing concepts are in this category. Because they are very often assigned meaning by association with other signs and because the manner in which one gives meaning to a word representing a concept is dependent on his personal experiences while the symbol was being established, the meaning of concepts vary a great deal among people.

The measurement of meaning therefore involves an assessment of the process used by the subject in ascribing meaning to a symbol as well as the quality of meaning of a word.

Qualitative Analysis of Vocabulary Development

The history of vocabulary testing has been influenced to a large extent by statistical approaches whose first concern has been the quantity or size of a person's vocabulary (Gansl, 1939). In a survey of the various techniques used to measure vocabulary, Kelly (1932) has identified twenty-six different methods for measuring vocabulary development. Of these, a great majority are largely quantitative measures and none could be found which measure both the quantity and quality of a person's vocabulary development.

The need for an effective measure of the quality of a child's vocabulary was stressed by Russell (1954):

> When vocabulary tests develop more as tests of depth, breadth, precision and application, they should come closer to being tests of concepts understood by children (p. 124).

The movement toward regarding vocabulary in qualitative rather than quantitative terms is the result of a growing awareness on the part of educators of that the complex ways in which students use words often reflect their semantic functioning. Both the degree and precision with which a child is able to fix an object or an idea with the appropriate word became the measure of vocabulary.

A number of studies have been carried out recently dealing with the qualitative evaluation of vocabulary development. Feifel and Lorge (1950) attempted to measure the qualitative vocabularies of children by analysing the definitions elicited from nine hundred school children of ages from six to fourteen years on the vocabulary section of the Stanford-Binet Intelligence Test. The responses of the students to those words were divided into five categories which included: synonym, use, explanation, demonstration, and error categories. These five groupings were felt by the authors to reflect a pattern in the response of the children correlated with age level. As the children got older (ten years) they used synonym and explanation responses more frequently while use and description and illustration types of responses were given more than any other type of response by six- and seven-year-old children. Responses of the groups represented a significant conceptual development as the children matured. A noticeable progression over the group from definitions involving concrete ideas and

particular qualities to statements stressing abstraction and class features of words was found in the study.

Annett (1959), studying the conceptual behavior of three hundred and three school age children aged between five and eleven years and forty-two adults between eighteen and seventy-three, found a definite progression in the way in which these subjects categorized material. Subjects typically went from no response for the younger to enumeration of the related qualities to contiguity or statements of association between objects to familiar, similar and class name statements. This progression suggests a need to analyze the characteristics separately then express the way they are associated to one another in the younger subjects then an expression of the way they are associated to one another in class memberships for the older children.

Burns (1960), studying the vocabulary development of 3,600 secondary school children, found that their definitions on vocabulary tasks varied as to the logic and their psychological relation to the word in question. In order to come to an understanding of the function of the child, both are required. Three main psychological categories of definitions were identified with further divisions found within each of these levels. The level, definition by emotional tone, characterized the youngest children and often had no social value. The second level involved definition by association with a specific situation

and was of a more mature level than the former. The highest level, illustrating the greatest maturity, was generic definition. It was found that all three levels of definition were found when a student was attempting to define a word he was not familiar with. This regression was marked by a tendency to depend to a greater degree on personal experience and a difficulty in making generic statements. This was signalled by a frequent use of such bridge words as "kind of" or "sort of".

Grant (1965), using the Feifel and Lorge (1950) study as a model, investigated the relationship of vocabulary responses and reading achievement levels. By controlling for sex, chronological age, and intelligence quotient she studied the responses of thirty matched pairs of grade six students and found that good readers in the sample tended to conceptualize on more complex levels than did poor readers who tended to perceive more words as concrete ideas with the result that they were not able to generalize from particular instances as were good readers.

Jackson (1968), using two groups of twenty-five grade six students stratified on their achievement in mathematics, investigated the relationship of core and specialized vocabularies. A sixty word test of core and specialized (mathematics) vocabulary was administered to both groups. The oral responses of each subject were categorized according to a scale value which included:

descriptive, functional, conceptual and error categories. It was found that significant differences existed in the knowledge of core and specialized vocabularies in both groups. Remarkable similarity in the type of definitions used differed only in the high group's greater use of conceptual types of responses and the low group's use of descriptive types of responses when defining specialized vocabulary.

On the basis of the above research, the advantages of a qualitative analysis of vocabulary are apparent. There remain however certain limitations in the methods with which this knowledge is gained. Evanechko (1970) considered a number of these limitations in devising his instrument to study the semantic functioning of a child.

These limitations included: the inescapable subjectivity of rater judgement when placing the student responses into various pre-established categories of definition, the time taken to adequately assess student responses, the confusion over whether the test is actually measuring word knowledge or a skill in word definition or the concomitant difficulty of knowing if the student has expressed all he may know about a word in the definition he has given. In addition to these limitations Evanechko (1970) points out the possibility of experimentor bias in the selection of suitable word lists or the inadequacy of dated word lists. In devising his instrument, therefore,

Evanechko (1970) attempted to avoid these possible pitfalls by indexing the various ways in which meaning is given to words rather than being concerned with specific words. He allowed the student to choose which definition he would prefer thus precluding the need for a time consuming rater judgement of the subject's responses.

Semantic Space

The notion of semantic space used by Evanechko (1970) grew out of a scaling procedure devised by Osgood (1957) to measure meaning. This method viewed meaning from the mediational point of view suggesting a unique kind of semantic organization underlying each individual's verbal behavior and stressed the active role of the organism in processing verbal stimuli. Schematically this is represented by figure 2. Following this is found Evanechko's (1970) explanation of this process.

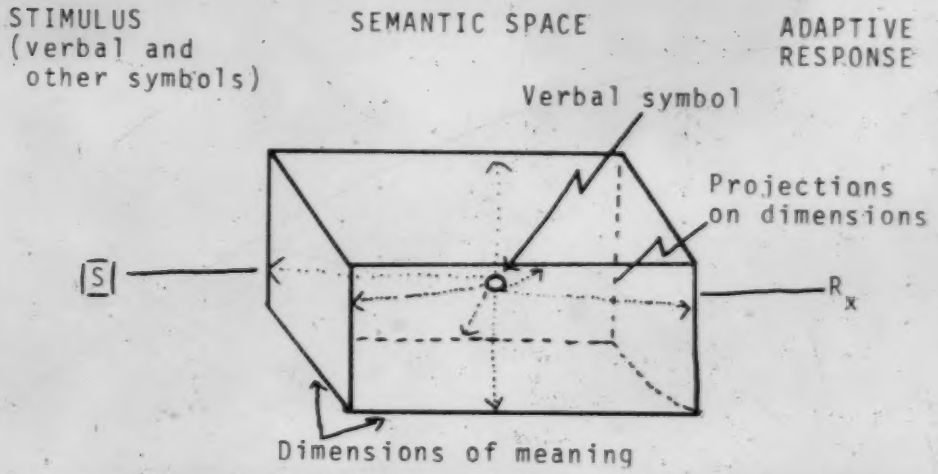

FIG. 2.2 MODEL OF ASSUMED RELATION OF SEMANTIC SPACE TO VERBAL STIMULI (taken from Evanechko, 1970, p. 18)

> According to the position taken by the writer, an individual makes adaptive responses (overt or covert) R_x to verbal stimuli on the basis of what these stimuli "mean". Meaning accrues to the symbol when it is placed in the individual's semantic space and, therefore, depends upon the dimensions which constitute this space. The dimensions, comprised of logico-semantic relations, i.e., the way meanings of words can vary, become conditioned behaviors resulting from the individual's learning history. In other words, the individual learns that words can stand for different dimensions of relevance of environmental data, e.g., physical attributes, logical relations, spatial relations, use, etc. Particular words, of course, draw upon only certain dimensions for meaning. The symbol, therefore, when it impinges upon this space, results in projections upon certain of the dimensions which define the space. The nature of the dimensions is thus a determiner of the quality of the meaning of the concept for which the word is a symbol and consequently a determiner of the meaning of the word. Dimensions of meaning will vary with experience, quality of intellectual functioning, and other meaning-related variables and it is assumed that the lack of certain of these dimensions necessarily denotes an inability on the part of the individual to perceive certain qualities of meaning.
>
> Semantic space, as a hypothetical construct, might, therefore, be defined as an n-dimensional space which identifies and defines the individual's verbal mediating responses and describes the process or strategy applied by this individual in assigning meaning to verbal data. This space may be considered to be Euclidian in nature, possessing a varying number of orthogonal dimensions. These dimensions define the limits of this space and are the kinds of logico-semantic relations the individual can conceptualize as existing between sensory data and linguistic symbols or between linguistic symbols themselves.
>
> (Evanechko, 1970, pp. 18-19)

The above notion of a semantic space could prove to be a valuable investigative tool. If the investigator is able to identify the dimensions which comprise an

individual's semantic space, he will then be able to define in a much more precise way the quality of the subject's vocabulary development than has hitherto been possible. The investigator will be able to not only define the words which a subject uses but also chart the various ways in which these words are employed.

FOCUS OF THE STUDY

The measurement of vocabulary can act as a measurement of meaning in as much as words are a symbolic expression of meaning. By using an instrument such as the S.F. Test one is able to index a person's semantic functioning. The dimensions or ways of processing word meaning indicate the way in which a person ascribes meaning to words and outlines those structures which have been established as a result of previous learning experiences. If efficient context use is viewed as the processing of sufficient semantic and syntactic cues to reconstruct author meaning, the inefficient use of context would be seen as an inadequate attention to such cues. In both cases it is assumed the reader would continue to process the various elements until he has reconstructed what he feels is the author's meaning. The differences in the two responses is that in one case the reader was successful and in the other he was not. One factor which may be

helpful in understanding the difference in the two readers is their semantic functioning as measured by the S.F. Test.

The inefficient processer of context is unable to take into account a sufficient number of semantic and syntactic cues to adequately reconstruct author meaning. It may be the case that the semantic space of such an individual is characterized by meaning dimensions which are of an unsophisticated sort. This would suggest that "meaning" for such a person would be dependent on immature meaning categories. He would therefore be less able to reconstruct author meaning that used categories of meaning of a more sophisticated nature.

The efficient processer of context on the other hand is able to use the semantic and syntactic cues of the context to accurately reconstruct meaning. It may be that this person's semantic space is typified by meaning categories of greater sophistication and therefore those dimensions of meaning which allow for more proficiency in the reconstruction of author meaning.

The purpose of this study therefore is to investigate the semantic space of two types of readers -- those that are able to process the context efficiently and those that are unable to do so.

Chapter 3

DESIGN OF THE STUDY

The purpose of the present chapter is to describe the population and sample of subjects used in the study. The two instruments used to investigate the research hypotheses will be described. The results of the pilot study will be discussed. This will be followed by a description of the procedures used for the collection, scoring, and analysis of the data for the main study.

POPULATION AND SAMPLE

The subjects of the study consisted of 120 grade six students registered in regular classrooms in the Edmonton Public School System during the 1974-75 school year. For the purposes of this investigation the researcher was assigned four elementary schools in an eastern section of Edmonton by the Educational Research Division of the Edmonton Public School System. The schools assigned were of a similar middle class socio-economic population base as determined by officials of the Educational Research Division.

Grade six students were chosen for the study because they represented that grade level found midway

within the grade range of subjects for both the Laing (1974) and Evanechko (1970) study. Possible problems with the instrument being too difficult or too easy were therefore minimized.

Seven regular homogeneously grouped classrooms were used in the study. All members of each class were administered the S.F. Test and the F.W. Test as a group on the mornings of two consecutive school days. From this test population, those students were eliminated who, because of absenteeism, were unable to complete both instruments. In addition, those students were eliminated from the sample who did not follow the instructions given for the writing of the tests. A third criteria for eliminating students from the sample was a reading level below grade four which was required in order to comprehend the instruments involved.

Following the deletion of these subjects, the F.W. Tests of the remaining subjects were marked. From this population, the sixty subjects who scored highest on the F.W. Test and the sixty subjects who scored lowest on the F.W. Test were chosen as the two groups that would be used in the study to represent the efficient processers of context and the less efficient processers of context. By establishing the two groups in this way, the investigator was able to investigate the semantic space of the two groups having the greatest difference possible in contextual

processing ability.

It was felt by the investigator that the sample used in the study would not be dissimilar from the overall grade six population in Edmonton. The scores on the system wide reading tests administered one week before this study was conducted, indicated that the grade six reading scores of the schools used for the study were average for the system.

INSTRUMENTATION

The tests used in the investigation were the Stanford Achievement Test, the Familiar Words Test (Laing, 1974) and the Semantic Features Test (Evanechko, 1970).

Stanford Achievement Test

This is a standardized test measuring the vocabulary and comprehension levels of students from grades one to nine for which local norms had been established.

It was administered system wide to all grade six students in the Edmonton Public School System. The results of this test were used as a check to ensure that those students used in the experimental sample had a reading level high enough to ensure the comprehension of the F.W. Test and the S.F. Test. In addition, the scores on the reading tests which proved to be average for the system were used as an indication that the study sample was not untypical

of other grade six students throughout the system..

Familiar Words Test

Development and Organization

The version of the instrument used was one constructed for an exploratory study of the ways readers in grades four, six and eight process the context to obtain word meaning (Laing, 1974). This was done using the cloze technique. The test consisted of sixty items -- forty-eight sentences and twelve paragraphs which were sub-divided into two sub-tests each of which contained twenty-four sentences and six paragraphs. The first sub-test had a word deleted from each sentence and paragraph. The second sub-test had a nonsense word substituted for the missing word. For the purposes of this study, the sub-test containing nonsense words was altered so that blanks appeared where the nonsense word had been originally placed. This was done to avoid possible student confusion and to facilitate the administration of the instrument. By rendering the complete test as blanks the student was able to fill in the missing word in the place it would normally be found in the sentence instead of having to fill in a blank following each sentence. i.e. The word ZOEVANDER means? _____ The decision to eliminate the nonsense words was also prompted by Laing's findings that student response did not vary from the blanks to the nonsense words (Laing, 1974, p. 181).

The F.W. Test had five embedded contextual devices or context clues similar to those used by Dulin (1968). In each sentence and paragraph at least one of these devices is found. Below is listed a description of the five clues found in the test.

> (a) Linked Synonyms and/or Appositives (Syn.): The familiar word missing from the context was paired or equated with a word, a group of words in a series, or separated by punctuation from an appositive or appositive phrase.
> (b) Direct Description (D/D): Words, prepositional phrases, or subordinate clauses were used to define, describe, or explain the familiar word missing from the context and for which the reader seeks meaning.
> (c) Contrast (Con.): Through the use of specific antonyms or definite phrases and clauses which were the opposite in meaning to the familiar word missing from the context the meaning of the unknown word could be determined.
> (d) Cause-Effect (C/E): The meaning of the familiar word missing from the context might be inferred by reasoning from cause to result or vice versa. Introductory words, such as because, as, and since, as well as linking words, such as therefore, were utilized in the test items.
> (e) Language-Experience (L/E): The familiar word missing from the context was placed in such a linguistic or experiential setting that the reader was intuitively led to the intended meaning.
> (Laing, 1974, p. 94)

In addition to specific context clues, Laing points out that there are numerous "meaning clues" found in the text of the sentences and paragraphs which the subjects report as being an aid in deriving word meaning. These "meaning clues" were defined as "the smallest unit or segment of the sentence or paragraph item reported by the subject as being used to aid him in completing the test

item. It might include syntactic and/or semantic information" (Laing, 1974, p. 130). According to Laing subjects made use of both aids when processing the context to gain word meaning.

For each word deleted from the sixty items in the test, each item could be completed with an appropriate word having a frequency count ranging from AA to 20, as determined by Thorndike and Lorge word list; that is, a word considered within grade four level of reading ease (Thorndike and Lorge, 1944).

The grammatical class of the words needed to complete the test items included nouns, verbs, adjectives, adverbs and function words. In addition to form class an attempt was made to place the words missing from the context in different places within the sentence, namely; the beginning, the middle, and the end of the sentence.

The reading difficulty level of the sentence and paragraph passages was controlled by comparison to a standard of ease or difficulty. The standard used was The Teachers' Word Book of 30,000 Words (Thorndike and Lorge, 1944).

The interest level of the passages was geared to topics which centered on family life, school activities and subject matter familiar to pupils in grades four, six and eight. Because the grade level of the students used in the present study was grade six it was felt that less

difficulty would be experienced in terms of the suitability of interest level or difficulty level than might have been the case in Laing's study.

Reliability and Validity

Tests of reliability and validity were done for the F.W. Test by its designer. For the purposes of this investigation it was assumed, based on these earlier tests, that the F.W. Test is both reliable and valid.

Scoring

The criteria established by Laing (1974) to score the F.W. Test was used in the present study. Each item was marked on a possible score of 4 points with the total possible score for the test 240 points.

The levels of the various word responses were judged as follows.

> Level 1 - An elicited word response placed in this category was considered mature in that the elicited word satisfied the following requisites:
>
> 1. It was grammatically correct; that is, it was the correct part of speech and had the required structural or inflectional ending.
> 2. It was specific to the context and reflected a sensitive awareness of the language used by the writer to convey the intended meaning or the meaning as justified by the reader in his interpretation of the context.
>
> For example.
> It was a very peaceful evening; the children were in bed, the wind had ceased its constant, irritating thrusts, and even the birds were content to enjoy the silence of the June evening.

Level 2 - A Level 2 elicited word response was required to satisfy the following criteria:

1. It was grammatically correct; that is, it was the required part of speech and had the necessary structural or inflectional ending.
2. The elicited word response completed the context in a meaningful way but with less precision or specificity than a word response for the same item placed in Level 1. It was considered a "good fit" as compared to the "best fit" of a Level 1 word response.

For example.
It was a very quiet evening; the children were in bed, the wind had ceased its constant, irritating thrusts, and even the birds were content to enjoy the silence of the June evening.

Level 3 - A word response was placed in this category because it was considered unacceptable in that it would not be used to complete the intended meaning of the context. The word response, however, was considered superior to a Lever 4 word response in that the S seemed to be using the context to obtain considerable meaning although not as intended by the context. The following criteria were developed for Level 3 word responses:

1. The word response was grammatically correct and had the correct structural or inflectional ending.
2. The word response indicated that the S seemed to have attempted to utilize the context but in so doing he ignored key ideas, failed to use sufficient evidence, or changed the context to satisfy his own interpretation of the context.
3. The elicited word response merely repeated a word used by the writer in the immediate environment of the missing word (i.e. in the same sentence), making sense but considered repetitious and therefore not a "good fit".

For example.
It was a very good evening; the children were all in bed, the wind had ceased its constant, irritating thrusts, and even the birds were content to enjoy the silence of the June evening.

Level 4 - A word response in Level 4 was considered unacceptable in that it exhibited at least one of the following characteristics:

1. The response was bizarre, unrelated to the

context, the wrong word to "fit" the context, or the reasons given were uttered in such a state of confusion that little or no meaning was revealed.

2. No word response was elicited. Usually the subjects stated, "I can't get that one," or simply, "I don't know."

For example.
It was a very cold evening; the children were all in bed, the wind had ceased the constant, irritating thrusts, and even the birds were content to enjoy the silence of the June evening.

It appeared, however, that even when the word response was judged Level 4 in quality, semantic and/or syntactic information was used to gain some meaning which was incorrect or obtuse although not always totally unrelated to the context. However, the cause of the failure to complete the meaning of the context accurately was not always clearly revealed in Level 4 responses.

Scoring word responses

A word response score was obtained for each S based on his word responses to the F.W. Tests - Sentences and Paragraphs. Numerical values were assigned in relation to the level of each word response. The values were as follows: Level 1 - 4; Level 2 - 3; Level 3 - 2; and Level 4 - 1. That is, for each word response a S was given credit for attempting to obtain word meaning in relation to the quality of the elicited word response.
(Laing, 1974, p.124)

Reliability of Scoring Word Responses

A random sample of twenty responses to the F.W. Test was recorded by two independent judges to determine the reliability of the scheme for classifying Ss' responses.

(See Chapter 4, page 66.)

Semantic Features Test

Development and Organization

The S.F. Test is an instrument constructed by Evanechko (1970) to chart the dimensions of children's meaning space. In order to do this, an identification of twenty-four logico-semantic meaning categories was made. A list of these categories is found below. For further definition and examples see appendix .

1. Synonym
2. Similarity
3. Superordinate
4. Coordinate
5. Attribute
6. Contrast
7. Action-of
8. Action-upon
9. Whole-part
10. Part-part
11. Common use
12. Use of
13. Repetition
14. Contiguity
15. Free association
16. Connotation
17. Analysis
18. Synthesis
19. Extension of a class
20. Denotation in context
21. Ostensive definition
22. Generic definition
23. Class membership implied
24. Intension of a class

Using these twenty-four categories, Evanechko attempted to ascertain which of the categories were used most frequently by each student. Since these categories were felt to represent different levels of semantic maturity, the selection of certain categories over others would be indicative of greater or lesser semantic

sophistication.

Using a paired comparisons technique Evanechko composed 276 pairs of statements or definitions which presented each of the logico-semantic categories once with each of the other twenty-four categories.

e.g. 16. a ____ modern - good
b ____ rule - to control people

The student was asked to rank which statement in each pair better described the word on the left to which it was related. Each question was composed of one pair of statements representing two categories of meaning. By making a choice, the subject was both choosing one category and not choosing another. Upon completion of the test the subject would have had an opportunity to choose or not choose each category over each other category once.

The advantage of an instrument such as the S.F. Test is that the decisions made in each question are straightforward and do not require any complex reasoning on the part of the subject or subjective interpretation on the part of the investigator as would be the case if the subject were simply asked to define a word.

The responses of the subjects on the S.F. Test are subjected to a multi-dimensional scaling in which the number of times a subject chooses one meaning category over another is indicated. The tendency of a subject to choose certain categories over other categories is made evident in the statistical analysis. These clusterings of

preferred categories are isolated and form a meaning dimension. A number of these clusterings are identified to form a group of dimensions which define the dimensions of the subject's semantic space. Because of the unique way subjects are able to respond to the S.F. Test it is possible to profile a unique semantic space for each subject.

Reliability and Validity

Tests of reliability and validity were done for the S.F. Test for the Evanechko (1970) study. For the purposes of this investigation it was assumed, based on these previous tests, that the S.F. Test is both reliable and valid.

Scoring

Scoring of the S.F. Test was done in three ways, each of which was felt to differentiate the semantic functioning of the two groups. The first method was an item analysis in which each test was marked using three adult models as keys. The second method involved the establishment of a matrices of proportion which pointed out the number of times one category was chosen over another. The third method was a multidimensional scaling which placed student responses into configurations revealing the manner in which meaning was ascribed to words.

PILOT STUDY

A pilot study was conducted in April 1975 in a grade six classroom in an elementary school of the Edmonton Separate School District. The students in the class were heterogeneously grouped and represented a cross-section of reading abilities. The purpose of the pilot study was to determine procedures for the administration of the S.F. Test and the F.W. Test.

A brief conference was held with the home room teacher prior to the study. A general overview of the study and the instruments to be used was given. On the mornings of two consecutive school days the tests were administered. Following this, a second conference was held with the teacher in order to determine if the proposed administration of the instruments required any revision.

It was found that when administering the instructions for the F.W. Test an emphasis should be placed on the need for only "one" word for each blank. In addition it was felt that a stress should be put on not filling in the blanks with proper names. The instructions for the S.F. Test appeared to be well understood. It was felt however that an emphasis should be placed on selecting an answer only after a careful reading of both possible statements.

On the basis of the pilot study it was felt that the investigator should administer the instruments in

order to guarantee consistency of instructions and writing conditions across the seven classes to be used in the study.

COLLECTION OF THE DATA

The main study was conducted in the morning periods between May 1 and May 12, 1975. In all seven classes the investigator was present to administer the instruments. This was done by a ten-minute orientation and instruction period followed by a thirty-minute period of time used to write the F.W. Test. This was followed by a series of instructions dealing with the S.F. Test which the students wrote for thirty minutes. The following morning the students were distributed the F.W. Tests. Following the individual completion of this test students were given the S.F. Test to complete. By and large most of the students were able to complete both instruments within the two hours writing time provided. Those who did not complete the tests were given time by their teacher later on in the day to do so.

Students who missed either the first or second day during which the instruments were administered were not included in the study.

The instructions given to the students are found in appendix B, along with copies of the F.W. Test and the S.F. Test.

ANALYSIS OF THE DATA

On the basis of their scores on the F.W. Test the students were divided into two groups of sixty students per group. These groups were then subjected to a t-test to insure their uniqueness. Group one was defined by the sixty students who scored most highly on the F.W. Test. Group two was defined by the sixty students who scored the lowest on the F.W. Test.

Having established two groups that demonstrated differing levels of ability in processing the context, a comparison was made between the semantic space of the subjects in each of these groups.

Using the responses of three graduate students as keys an item analysis was conducted to determine the extent to which the subjects' responses approximated those of an adult. This served as a second comparison that could be made regarding the differing levels of semantic maturity of the two groups of students.

A matrices of proportion was established to ascertain the number of times one meaning category was chosen over another. This was done using the same procedure as Evanechko (1970). This served as a second indicator of the differing levels of semantic sophistication of each group.

The S.F. Tests of each group were separately subjected to a statistical analysis involving a

multi-dimensional scaling technique. From this, clusters of meaning categories were identified and grouped into meaning dimensions. For each group of subjects a unique semantic space was defined based on these dimensions. A comparison was then made of the semantic space of each group and judgements were made as to the maturity or semantic sophistication of each group by the investigator.

SUMMARY

This chapter has presented a description of the subjects used in the study, a description of the tests and the procedures used in scoring. In addition an outline of the statistical treatment has been included.

Chapter 4

ANALYSIS OF THE DATA

INTRODUCTION

This chapter will be divided into three main sections. The first section will deal with an analysis of the data gathered for the Familiar Words Test. It will include scoring of the responses, reliability tests of scoring techniques and characteristic student responses. The second section will deal with an analysis of the data gathered for the Semantic Features Test. This will include an item analysis, an analysis of the proportion of preferences and a multi-dimensional scaling of the data. The final section will consist of a discussion of the results reported in the first two sections.

FINDINGS - FAMILIAR WORDS TEST

Scoring of F.W. Test

The purpose of this test was not to study in detail the various ways in which students process the context but rather to establish two distinct groups with significant differences in their overall degree of sensitivity to the context. By doing this it was hoped that a comparison could be made between the dimensions of the semantic spaces which defined each group. In order to

accomplish this the investigator scored each test on the basis of Laing's (1974) criteria. One hundred and fifty-eight tests were scored. The sixty tests with the highest scores were isolated and designated as the high group while the sixty tests with the lowest scores were isolated and designated as the low group. In this way it was hoped that differences within the total grade six group could be accentuated for the purpose of the investigation.

The results indicated that the high context group score averaged 190.68 on the test while the low group averaged 144.13 (see Table 1 below). The highest possible score one could achieve on the test was 240.

TABLE 4.1 MEANS AND RANGES OF F.W. TEST SCORES

	Mean	Range
Total Group	164.4	110-223
High Context Group	190.7	175-223
Low Context Group	144.1	110-162

A "t" test was made to establish the significance of the difference between the means of each group of tests. The results indicated on Table 2 establish this.

TABLE 4.2 T-TEST - DIFFERENCES BETWEEN MEANS OF INDEPENDENT SAMPLES

X BAR 1	X BAR 2	S DEV 1	S DEV 2	DF	T	P-TWO TAIL
190.68	144.18	12.92	12.95	118	19.689	.00000

Reliability of Scoring

The reliability of the F.W. Test scoring was determined by inter-scorer agreement. Twenty tests were randomly selected from both groups and re-scored by two independent judges both of whom were graduate students in Reading. Agreements were calculated in terms of percentage through the Arrington Formula (Feifel and Lorge, 1950). The responses of each observer's scoring that agreed with the others (doubling the agreements) was divided by this total plus the disagreements.

i.e. $\frac{2 \times \text{agreements}}{2 \times \text{agreements} + \text{disagreements}}$

The percentage of agreements for the 60 items on the test ranged from 96 to 99 per cent. This was considered adequate. The qualitative scoring of the S.F. Test appeared to be satisfactory (see TABLE 4.3).

TABLE 4.3 PERCENTAGE OF AGREEMENT BETWEEN INVESTIGATOR AND INDEPENDENT JUDGES IN THE SCORING OF WORD RESPONSES ON FAMILIAR WORDS TEST

Independent Judges	Percentage of Agreement
1[a] + 2	99.86
1 + 3	97.12
2 + 3	96.34

[a]Investigator

Characteristics of Student Responses

The main purpose of administering the F.W. Test was to establish two groups of grade six students who displayed significant differences in their level of contextual processing efficiency. While no formal analysis was carried out on the way in which individual students in this study processed the context, a number of characteristic ways of responding were noted which seemed to differentiate the high from the low groups.

A previous analysis of characteristic student responses was done by Laing (1974, Chapter V). In a detailed account of the responses of fifty-four subjects, she lists four basic areas of analysis. These include the use of linguistic information, the control of language, the use of meaning cues and the use of the intellect. In each of these areas of analysis a comparison was made between the different age levels studied as well

as their responses to the sentence as compared to the paragraph section of the F.W. Test.

In the present study a number of group characteristics are noted with examples for each. The responses of the high group were characterized by a choice of words which more often tended to take into account both the preceding and succeeding context than did the responses of the low group. This differing sensitivity to the surrounding context is illustrated by comparing the responses of two subjects from each of the two groups for certain sentences.

Responses from the high group are indicated below in the examples by upper case lettering while responses for the low group are indicated by lower case lettering.

Sentence #1-18 King Albion RULED, GOVERNED, left, wanted for over twenty-five years.

Sentence #1-22 Hastily the boys REPORTED, RELATED, ran, talked to the police that they had seen a man who closely resembled the wanted bank robber, pictured in last night's paper.

In addition, it seemed that a greater sensitivity to the differing shades of meaning of the words in the context was noticed in the high group. Whereas this group tended to select a word that was precise and adequate to the complete sentence, the low group would often select general words such as "nice", "fun" or "great", that were

sensitive to only a portion of the context or were of such common usage that their meaning could be interpreted in a number of different ways.

Sentence #1-5 As the flames leaped around him, Bob tried FRANTICALLY, DESPERATELY, hard, again to open the door by putting all his weight against it and kicking it hard, but to no avail; it would not budge.

Sentence #1-24 Because he had wanted so long for the big day to arrive, Freddy now moved ANXIOUSLY, ENTHUSIASTICALLY, right, straight, into action.

There was a noticeable difference in the degree of syntactic sensitivity of each group. In many cases it appeared that the low group was able to use an adequate word but was unable to express it in its grammatically correct form. This situation was less frequent for the high group.

Sentence #2-3 At the hockey game everyone was CHEERING, ROOTING, cheered, rooted for the home team of Loxville.

Sentence #2-8 Aunt Mamie HATED, DESPISED, hates, despises dogs if they were dirty, but she enjoyed them if they were clean and not too barky.

There was a noticeable difference in the vocabulary development between the two groups. In sentences using

synonym context clues, subjects in the low group seemed unable to select a synonym because they did not know the meaning of the original word.

Sentence #1-20 A small quantity of poison, juice, chemicals, medicine or venom, was taken from the rattler and injected into a rabbit to find out how it would react.

Sentence #2-19 Fossils, rocks, sand, roots, which are the hardened remains or traces of plants and animals, were often found on the prairies by early pioneers.

Although no interviews were conducted to see which part of the context was used by individual subjects to determine the familiar word, the responses tended to agree with Laing (1974), that the high group, overall, more frequently made use of the embedded context clues than did the low group. One such context clue, the use of direct definition in parentheses, may be an indication of this.

Sentence #1-12 Fresh vegetables are TRANSPORTED, SHIPPED, always, usually (conveyed in large vans) to the local market at least twice a week.

Sentence #1-17 Objects move only when a FORCE, push, pull (a push or a pull) acts upon them.

The ability of the subjects to bring their life experiences to the reading situation varied between the groups. The high group appeared to be more able to bring

past experience to the situation and remain aware of the social context than was the lower group.

Sentence #2-2 When Johnny disturbed the class, the teacher had to DISCIPLINE, SCOLD, punch, kick him.

Sentence #1-1 After a long day at the beach the older folks were EAGER, ANXIOUS, begging, pleading to go home, but the children begged them to stay longer.

Overall, the high group seemed to have fewer questions left blank, fewer two-word responses and less often used proper names to complete the sentences and paragraphs.

Both groups experienced greater difficulty with the paragraph questions than the sentence questions although the high group proved to be more capable on both tasks. Test writing fatigue did not seem to be a factor as both groups seemed to respond with a consistent level of accuracy throughout the entire test.

Summary

The study was carried out by using an instrument and scoring technique which had been used previously in a context study (Laing, 1974). In the present study, no formal analysis of student responses to individual items was carried out. The investigator did, however, score the items on the basis of Laing's (1974) criteria and compare the differences in these responses. It was found that the

differences noted in the responses of the two groups in the present study closely paralleled these differences noted by Laing (1974). In the present study students at one grade level with differing degrees of contextual processing ability were investigated, while in Laing's (1974) research students from different grade levels were studied.

The high group was generally characterised by a greater sensitivity to the preceding and succeeding context, the embedded context clues and the syntax than was the low group. The high group typically had a larger vocabulary and were more realistically able to bring experiences with specific social situations to the reading situation.

Both groups were asked to "think of a word that fits best and gives meaning to the sentence". The greater sensitivity to the context by the high group made them more precise in their choice of words. The sentences or paragraphs had not been completed until a larger number of semantic and syntactic variables had been taken into account. The low group on the other hand chose words that often had only a general or partial relation to the context. These were often grammatically incorrect. For this group meaning was given to the sentence without the consideration of a large number of variables that appear to have been taken into account by the high group.

FINDINGS - SEMANTIC FEATURES TEST

Test Description

The S.F. Test was devised to index the dimensions of a child's semantic space. This was accomplished by presenting each child with 276 paired comparison items for which he was to choose the "better" meaning. Each item consisted of two of twenty-four logico-semantic categories of meaning. After completing the test, each subject had had a chance to choose between each category compared once with every other category. One of the findings of the Evanechko (1970) study was that there was a significant difference in the level of semantic maturity, as defined by the S.F. Test, between grade five and grade eight students. In the present study an attempt was made to discover if such a difference existed between two groups within one grade that differed in their level of contextual processing efficiency. The responses to the S.F. Test were treated in the same two groups that had been established by the F.W. Test.

The analysis of the test results involved three parts. The first part involved an item analysis which compared the responses of each group with three adult models. The second part involved the identification of matrices of proportion which indicated the number of times one category was chosen over each of the others. The

third and perhaps most important analysis involved subjecting each group to a multi-dimensional scaling technique.

Item Analysis

An item analysis was performed on the data to get an indication of differences, if any, in the level of semantic sophistication between the two groups. On the assumption that as a child matures his semantic abilities come to more closely resemble those of an adult, it was felt that the responses of the high group would more closely resemble an adult model than the low group. Three graduate students were chosen to act as adult models and each subject was compared with each of the adult responses. Although variations were noticed between the three models, it was felt that they were representative of three types of adult semantic competence. The scores for individual subjects were gathered into high and low groups and a "t" test was performed to establish the significance of the difference between the means of the groups for each adult model.

The results (see TABLE 4.4) indicate a significant difference between the high and low groups. The relatively low showing of both groups may indicate that students of this age level have not as yet fully entered the stage of formal operations (Piaget, 1958).

TABLE 4.4 ITEM ANALYSIS - SELECTED STATISTICS - THE SEMANTIC FEATURES TEST

Key	Mean Low Group	Mean High Group	D.F.	T	P. Two Tail
1	175.30	185.85	118	3.39	.0009
2	170.68	181.97	118	4.43	.0000
3	159.50	173.73	118	5.28	.0000

It would appear that by one measure at least a difference is noted in the semantic functioning of grade six students based on their differing abilities to process the context.

Matrices of Proportion

For each group, matrices of proportion were calculated which indicated the number of times one category was chosen or not chosen over all of the others. This information was condensed and converted into a table (see Table 5) and used as a limited indication of the semantic maturity of each group. One of the findings of the Evanechko (1970) study was that students of all ages made use of all of the logico-semantic categories. It was the way in which these categories were grouped that had to be considered in order to distinguish different levels of semantic functioning. It was nevertheless felt that a consideration of the preference of categories would

serve as one indicator of differences in semantic maturity.

In general both groups were very similar in their preference of categories. However a number of differences were revealed.

In both cases, Connotative and Contrast classes were not preferred while Synonym, Ostensive Definition and Analysis were highly preferred. The high group more often preferred class membership categories such as Class Membership Implied and Generic Definition than did the low group which more often preferred Ostensive Definition. This would seem to indicate that in terms of the instances of preference, the high group exhibits a greater tendency toward more logically sound categories than the low group which tended to choose categories dealing with personal experience and immediate concrete associations such as Common-use, Repetition and Contiguity.

It should be noted that the preferences of categories of the two groups is very similar indeed. Although there were a number of categories which indicated a difference in preference, there was, overall, a remarkable number of categories which were preferred an equal number of times by both groups. In fact 16 out of 24 categories were within two choices of being identical for both the high and the low group.

The establishment of a matrices of proportion then acts as a second indicator of the differences in semantic

TABLE 4.5 PREFERENCE OF CATEGORIES

		No. of Categories over which Category was Chosen	
	Category	Low	High
1	Synonym	18	22
2	Similarity	13	14
3	Superordinate	13	11
4	Coordinate	4	6
5	Attribute	10	11
6	Contrast	1	1
7	Action-of	10	11
8	Action-upon	5	6
9	Whole-part	10	7
10	Part-part	4	3
11	Common-use	9	4
12	Use of	17	18
13	Repetition	10	7
14	Contiguity	17	14
15	Free Association	8	7
16	Connotation	1	2
17	Analysis	19	20
18	Synthesis	16	16
19	Extension of a Class	14	17
20	Denotation in Context	10	11
21	Ostensive Definition	23	18
22	Generic Definition	11	17
23	Class Membership Implied	15	17
24	Intension of a Class	19	19

functioning of grade six students who differ in ability to use the context to gain word meaning.

Multi-Dimensional Scaling

In order to derive an indication of how the students arranged the various categories of meaning they use in their semantic functioning, the responses of each group were subjected to multi-dimensional scaling (Kruskal, 1964, a,b). This was done in two basic stages. First a matrices of proportion was established as described above. It was felt that values of 0.5 indicated no preference. In order to judge the degree to which a stimulus was preferred, a similarity matrices was established by deviating the values about 0.5 and taking the absolute value of the result. Larger numbers would therefore indicate a greater preference. The data as represented on the similarity matrices was then subjected to the Kruskal-Shepard Multi-dimensional Scaling Technique described by Kruskal (1964, b).

The basic function of this technique is the geometric representation (in distances) of, in our case, similarities between objects.

> Multidimensional scaling is the problem of representing "n" objects geometrically by "n" points, so that the interpoint distances correspond in some sense to the experimental dissimilarities between objects (Kruskal, 1964, a, p.1).

The differences in choice therefore are expressed as differences in distance. As stimuli are more similar (less preference between categories) the distances are smaller. The degree to which a configuration or geometric representation of the data is successful in representing similarity of stimuli and distances is called "stress". The lower the stress the more representative the configuration is of the data. During the scaling procedure the investigator derived various configurations having differing numbers of dimensions in order to achieve the "best fit" which consisted of balancing the fewest number of dimensions with the lowest stress. Four dimensions were decided on as the best fit (see Table 6).

Dimensions are made up of a number of categories of meaning and individually represent one manner in which an individual constructs meaning. Those categories along a dimension which load highly are considered to be those which are significant to the subject's construction of meaning. For the purposes of this study, loadings greater than +0.55 or less than -0.55 were considered to be significant (see Tables 7, 8, 9, 10).

It should be noted that the decision as to how many dimensions to choose is somewhat tentative.

TABLE 4.6 SIMILARITY DATA STRESS

Number of Dimensions	Low	High
8	.092	.075
7	.076	.075
6	.095	.090
5	.112	.112
4	.154	.159
3	.211	.205
2	.289	.293
1	.433	.453

> The final determination of how many coordinates to recover from the data rests ultimately with the scientific judgement of the examiner.
> (Kruskal, 1964, p.15)

Kruskal mentions three criteria which can serve as a guide in making such a decision. They are a small stress level, a satisfying interpretation, and the accuracy of the original data. The stress level in this study ranged between .150 and .160 which was "fair" according to Kruskal. As the data seemed to give an interpretation in keeping with indications in the item analysis and proportion of preference analysis the selection of four dimensions was not thought to be unreasonable.

All dimensions in both groups were bipolar in nature. For each dimension an attempt was made to

characterize each pole and label each dimension by considering the categories falling or clustering at the extremes of each dimension. Comparisons were then made between the high and low groups.

The naming and interpretation of the various dimensions involved a certain degree of investigator subjectivity as it involved a consideration of such elements as knowledge of test items, children's semantic behavior and the operation of the Multidimensional Scaling Program. This is pointed out by Evanechko (1970) in his study:

> Labelling of dimensions was done with considerable tentativeness considering in each case the loading of meaning categories on dimensions as well as the inherent psychological processes (p. 148).

All of the meaning dimensions identified in this study were bipolar as indicated by the sign of the categories. The location of a concept can occur anywhere along a dimension. The meaning of a concept is dependent upon where along the dimension it falls. If for example a dimension consisted of "class intention" at one pole and "use-of" at the other pole, the meaning of a concept such as "house" could be given different meaning depending where it tended to fall along the dimension. The variety of meanings which one person can ascribe to a word becomes enormous because of the number of points a word can inhabit. For the purposes of this study, the

positive end of a dimension was called pole one and the negative end of the dimension was called pole two.

Dimension one. The first dimension for the low group seems to involve a number of categories dealing with the relationship and interaction of members. Pole one indicates a tendency to use the interaction of place, time and activity as well as contextual relationships in an attempt to classify phenomena. This approach to the mediation of meaning involves a person's use of his personal experience with objects as well as an ability to divide concepts into their parts. The categories which illustrate this are Contiguity, e.g. apple - grows on a tree; Analysis, e.g. rule - having power over people; Denotation, e.g. bitten - bitten by a snake; and Intention, e.g. notice - see and remember. All of the above categories with the exception of Denotation were highly preferred (Table 4.5).

The second pole consisted of relatively unpreferred categories. It was characterized by a direct experience view of meaning. The categories are: Contrast, e.g. loud - soft; Action-upon, e.g. throw - ball; Free-association, e.g. enjoy - fun; and Attribute, e.g. lemon - sour.

Because of the number of experience and relational types of categories present, dimension one for the low group was labeled EXPERIENCE-RELATION.

Dimension one of the high group appeared to involve classification and interaction types of categories. Pole

one was classification-oriented with some regard given for the use of experience to establish these classes and to identify synonyms. The categories employed are: Generic Definition, e.g. cup - dinnerware; Intention of a class, e.g. sipped - drank a little at a time; Use-of, e.g. orange - you eat it; and Synonym, e.g. big - large. The categories in pole one were highly preferred (Table 4.5).

Pole two consisted of categories of meaning which required the synthesis of parts into a larger whole (Coordinate, e.g. chair - table, and Part-part, e.g. wall - floor). In addition, this pole depended somewhat upon the use of personal experience (Connotation, e.g. modern - good) and an awareness of the actions performed on concepts (action upon, e.g. throw - ball). The categories on this pole were not highly preferred.

Because of the strength of the classification categories on this dimension it was labelled CLASSIFICATION.

The loading of the categories for dimension one of the high and low groups are found in Figure 4.1.

TABLE 4.7 DESIGNATION OF SIGNIFICANT CATEGORIES - DIMENSION ONE

Low Group		High Group	
Intention of a class	1.059	Synonym	.901
Analysis	.870	Generic Definition	.721
Contiguity	.820	Intention of a class	.660
Denotation in Context	.585	Use of	.613
Action-upon	-.843	Action-upon	-.936
Free Association	-.805	Parts-part	-.857
Attribute	-.794	Connotation	-.779
Contrast	-.671	Coordinate	-.626
EXPERIENCE-RELATION		CLASS	

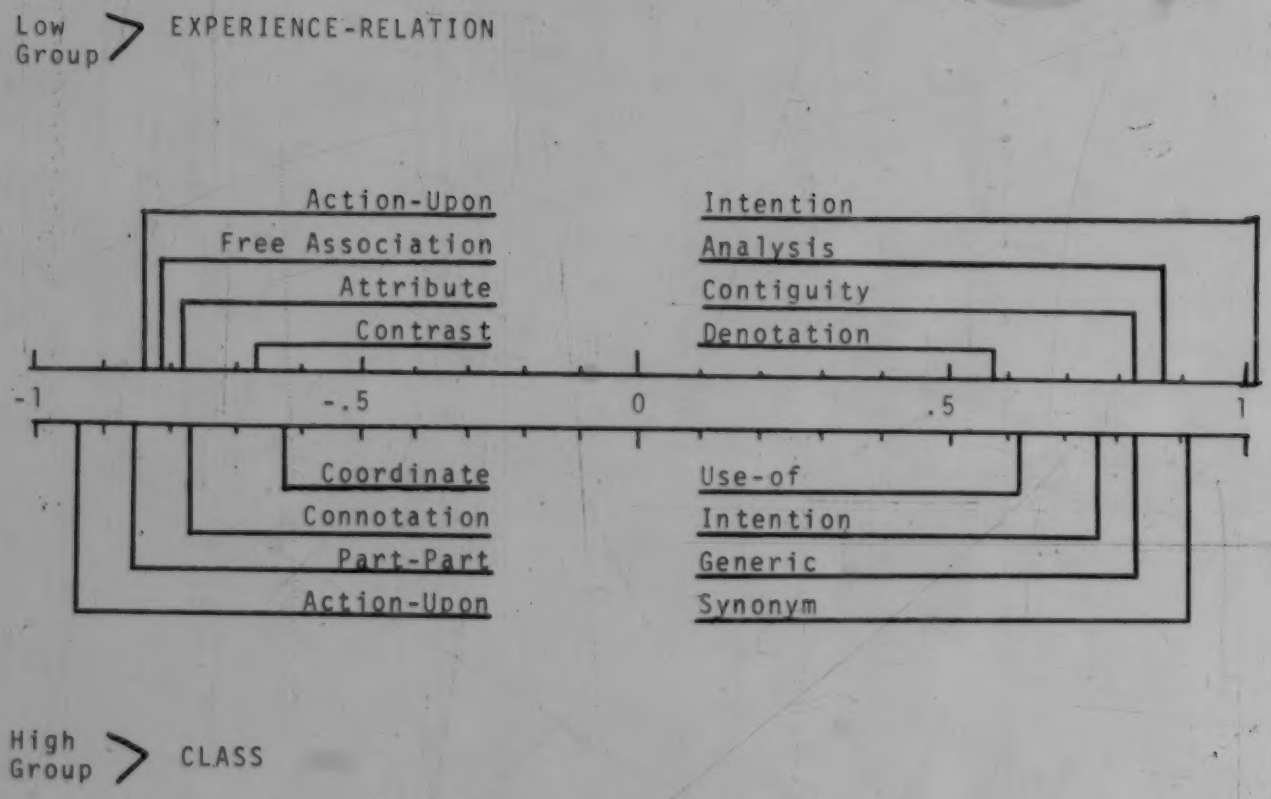

FIG. 4.1 SEMANTIC FEATURES TEST MULTIDIMENSIONAL SCALING DIMENSION LOADINGS - DIMENSION I

Dimension two. The second dimension is typified by the use of action categories in order to form incomplete classifications. Pole one uses Repetition, e.g. drink - you drink water; Action-upon, e.g. sweep - floor; and Extension of a class, e.g. bugs - insects and flies. Of these the first two are not highly preferred whereas the final one is preferred.

Pole number two contains a similar combination of action and incomplete classification categories as does pole number one. The use of Action-of, e.g. dog - bark, indicates the concrete action associated with and performed by the agent. The use of Superordinate, e.g. bird - sparrow, and Ostensive Definition, e.g. selfish - all for yourself, indicate an attempt to classify which remains dependent on personal experience and paired relationships. This dimension was labeled ACTION-CLASS.

Dimension two for the high group was labeled RELATION. Both poles appeared to involve categories which used relationships to mediate meaning. Pole number one consists of: Extension of a class, e.g. bugs - insects and flies; Action-of, e.g. dog - bark; Attribute, e.g. turtle - slow; and Part-part, e.g. wall - floor.

Pole number two contains: Free association, e.g. carry - heavy; Contiguity, e.g. stove - found in a kitchen; Common-use, e.g. student - pencil. Except for extension of a class and contiguity all other categories along this

dimension were not highly preferred.

TABLE 4.8 DESIGNATION OF SIGNIFICANT CATEGORIES - DIMENSION TWO

Low Group		High Group	
Extension of a class	.922	Extension of a class	.894
Repetition	.704	Action-of	.668
Action-upon	.577	Part-part	.576
		Attribute	.562
Action of	-.931	Free Association	-.873
Superordinate	-.666	Contiguity	-.834
Ostensive Definition	-.573	Common use	-.690
ACTION-CLASS		RELATION	

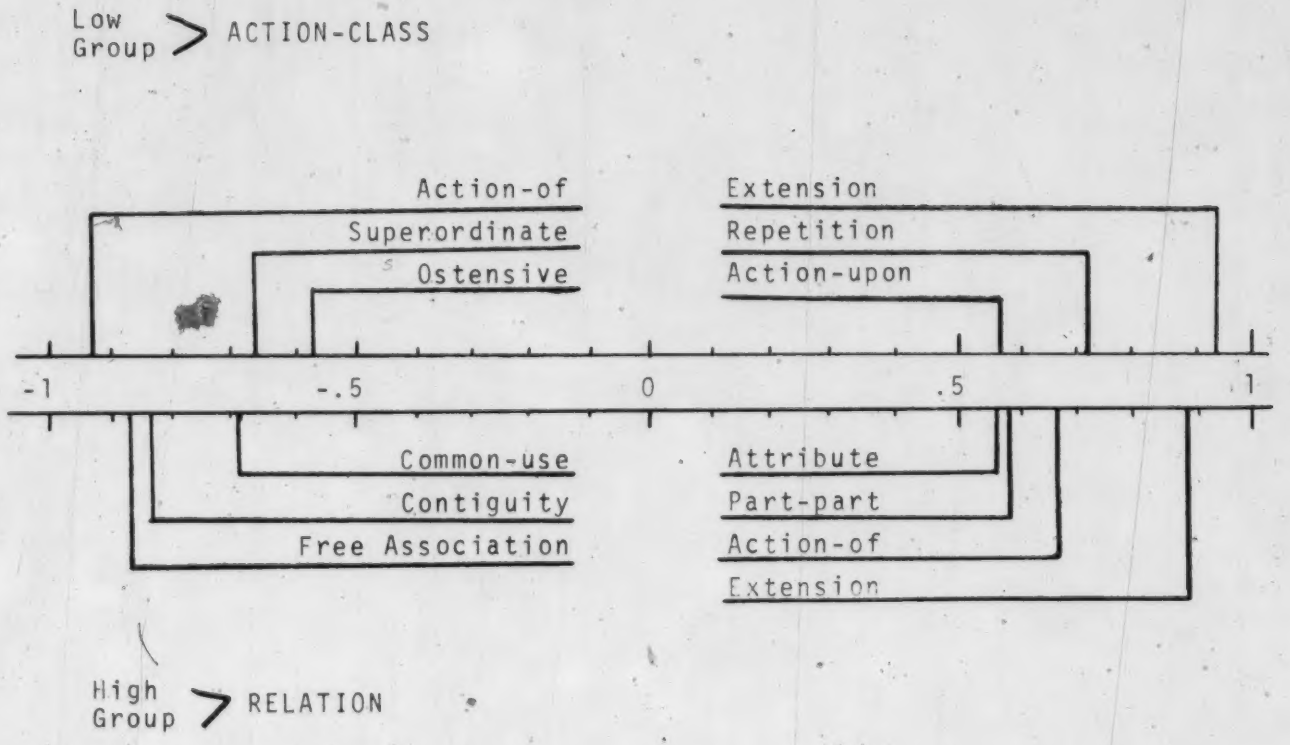

FIG. 4.2 SEMANTIC FEATURES TEST MULTIDIMENSIONAL SCALING DIMENSION LOADINGS - DIMENSION 2

Dimension three. The third dimension's pole one of the low group indicated an ability on the part of the language user to ascribe meaning to a concept based on the common use made by that object (Common use, e.g. farmer - tractor). Along with this, the language user was able to integrate parts into a whole and find replacement words or synonyms (Synthesis, e.g. acorns - from an oak tree; Synonym, e.g. steal - rob). Both synthesis and synonym loaded highly and were highly preferred whereas this was not the case with Common-use.

Pole number two was characterized by relational categories. Connotation, e.g. royal - strong, indicates a relationship of two concepts based on personal experience. Contrast, e.g. hard - easy, involves the relationship of different degrees or qualities on a continuum. Coordinate, e.g. beets - peas, refers to a relationship of parts to a larger whole. Although all three categories loaded relatively highly, none of them was greatly preferred. The dimension was labeled ASSOCIATION - RELATION.

The categories for pole one for the high group were very highly preferred. It was characterized by classification categories. Intention of a class, e.g. album - book for pictures, indicates definition by genus and species. Class membership, e.g. boar - a kind of pig, indicates an implied class membership by the use of "sort of" or "kind of". As well as class membership, the

analysis of concepts into their various parts was illustrated by the category Analysis, e.g. loosen - to make it less tight. Two other categories which loaded less highly were noted: Contiguity, e.g. comma - placed in a sentence, and Attribute, e.g. flame - hot. These latter two categories indicate an ability on the part of the subject to use the interaction of place, time and activity as well as to identify individual qualities of a concept.

The second pole for dimension three of the high group indicated a variety and categories. Contrast, e.g. wet - dry, and Whole-part, e.g. face - eye, demand that the subject be able to see the relation of parts to a greater whole. Synthesis, e.g. airline - it has passenger planes, indicates an ability to both see relationships and combine them into a larger whole. Repetition, e.g. approach - approach the door, indicates a relation type of category based on personal associations. The dimension was labeled CLASS - RELATION.

TABLE 4.9 DESIGNATION OF SIGNIFICANT CATEGORIES - DIMENSION THREE

Low Group		High Group	
Synthesis	.771	Analysis	.967
Synonym	.717	Intention of a Class	.720
Common use	.645	Class Membership	.676
		Contiguity	.603
		Attribute	.559
Connotation	-1.175	Contrast	-.973
Contrast	-.801	Whole-part	-.752
Coordinate	-.732	Synthesis	-.707
		Repetition	-.568
ASSOCIATION		CLASS-RELATION	

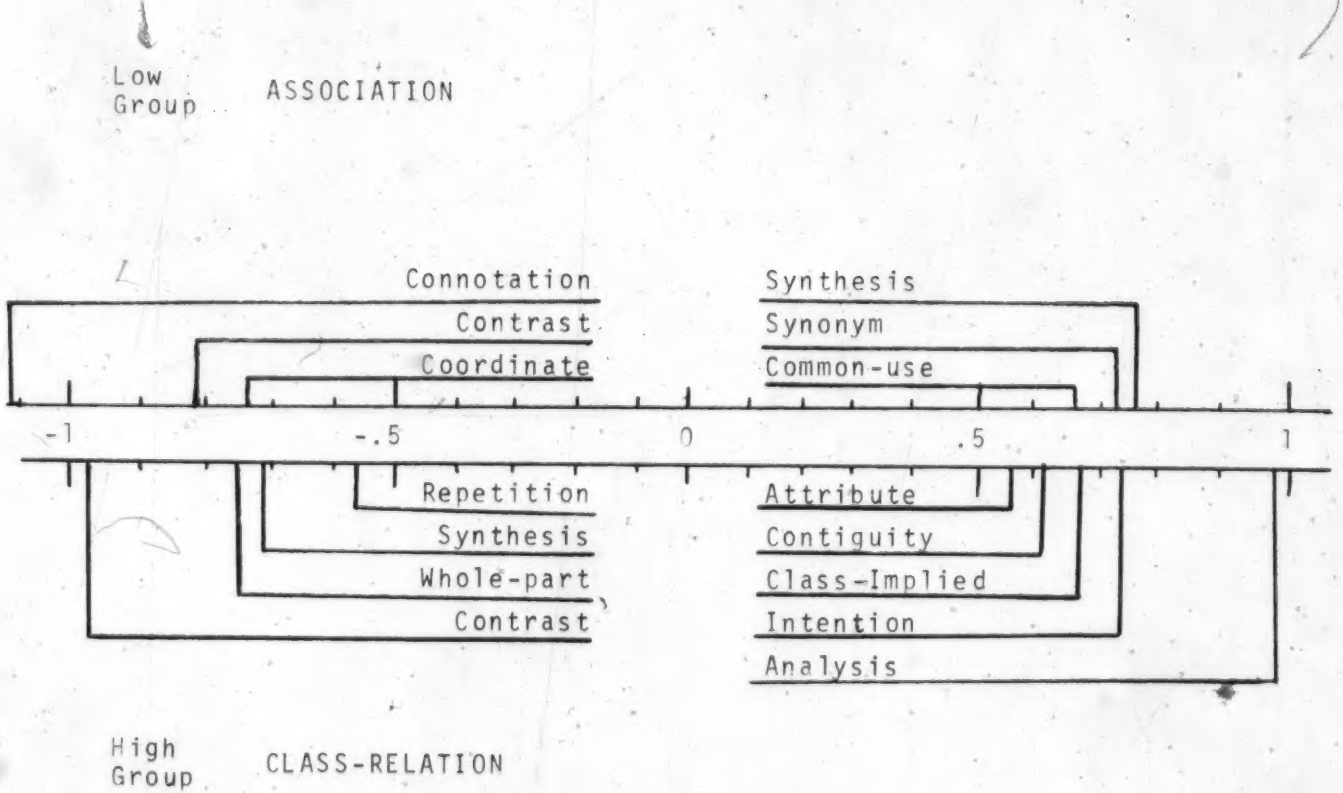

FIG. 4.3 SEMANTIC FEATURES TEST MULTIDIMENSIONAL SCALING DIMENSION LOADINGS - DIMENSION 3

Dimension four. Pole one of the low group of the fourth dimension indicates an as yet incomplete ability on the part of the subjects to make generalizations and to classify phenomena. Use of, e.g. shotgun - for shooting, demands an ability to identify the function of concepts. Whole-part, e.g. book - chapter, requires that the subject recognize important parts of a familiar whole. Synthesis, e.g. community - it has many people, indicates an ability to put together parts into a whole; and class membership, e.g. refreshments - like something to eat, suggests a limited capacity to form generalizations. All categories but the whole-part category were highly preferred (Table 4.5).

The second pole contains a number of categories which indicate similarity between members through an alignment along some dimension. This similarity can be of two concepts which have different shades or nuances of meaning (Similarity, e.g. smile - laugh) or two concepts, one of which is a member of a class, (Superordinate, e.g. animal - deer), or two concepts of which each word pair refers to opposite ends of a continuum (Contrast, e.g. loud - soft). In addition, the similarity of a word and referent through function was identified (Analysis, e.g. mention - talk to others about something). Both similarity and analysis were highly preferred. The dimension was labeled SIMILARITY.

Pole one of dimension four for the high group contains Intention of a class, e.g. canal - man-made river, which indicates an ability to identify both genus and species of a concept. This requires an ability to abstract and construct logical relationships. Categories using personal experience were also noted. These included: Use-of, e.g. bumper - for protecting a car, and Connotation, e.g. certain - good. Intention of a class and Use-of were both highly preferred.

Pole two involved both action and similarity as ways of deriving meaning. Similarity and Superordinate were present and correspond to the second pole on dimension four for the low group. Action of, e.g. cat - purr, and Repetition, e.g. beautify - beautify the room, indicate the use of concrete action performed by an agent when gaining meaning. The dimension was named CLASS-ACTION.

TABLE 4.10 DESIGNATION OF SIGNIFICANT CATEGORIES - DIMENSION FOUR

Low Group		High Group	
Use-of	.887	Intention of a Class	.810
Class Membership Implied	.781	Use-of	.744
Whole-part	.731	Connotation	.704
Synthesis	.580		
Similarity	-.900	Similarity	-.855
Superordinate	-.760	Action-of	-.803
Contrast	-.660	Superordinate	-.763
Analysis	-.554	Repetition	-.579
SIMILARITY		CLASS-ACTION	

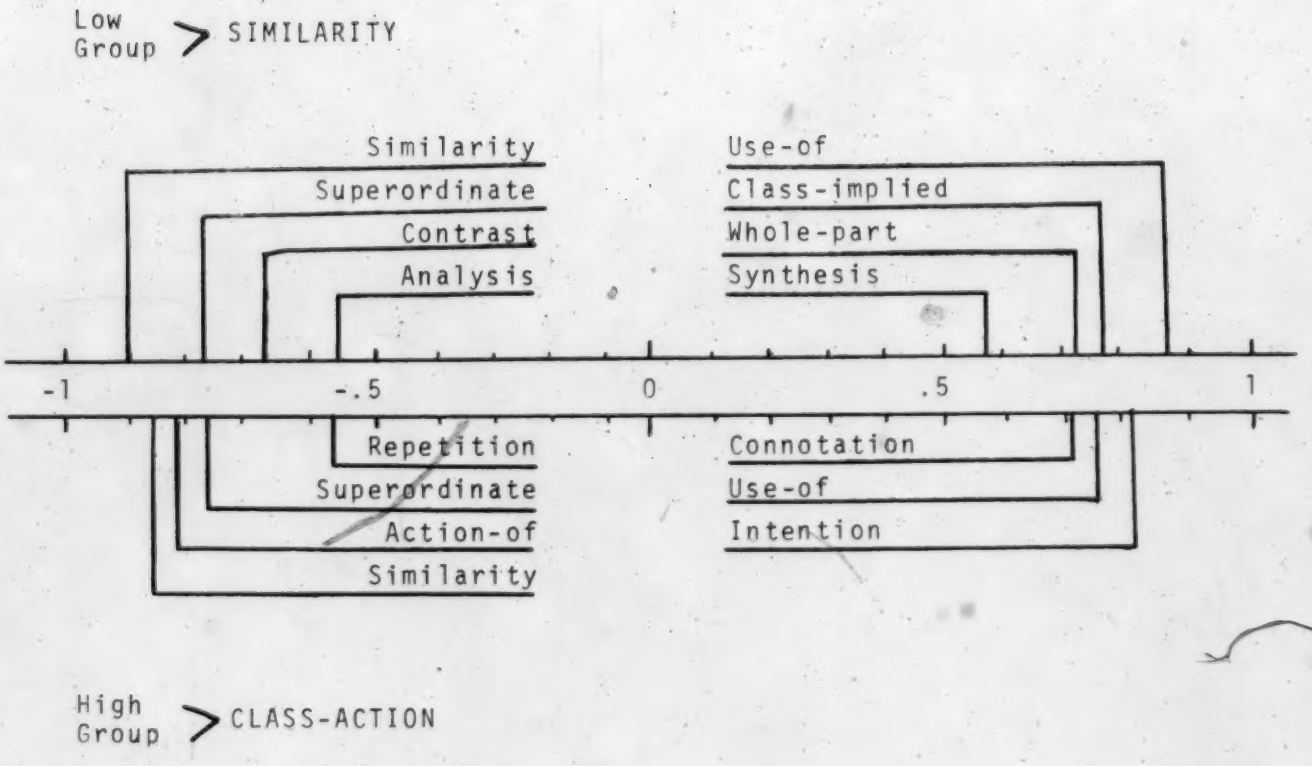

FIG. 4.4 SEMANTIC FEATURES TEST MULTIDIMENSIONAL SCALING DIMENSION LOADINGS - DIMENSION 4

TABLE 4.11 DIMENSION DESIGNATION FOR MULTIDIMENSIONAL SCALING PROCEDURE

Dimension	Low Group	High Group
1	Experience-Relation	Class
2	Action-Class	Relation
3	Association	Class-Relation
4	Similarity	Class-Action

SUMMARY OF FINDINGS

Overall, both high and low context groups had similar preferences of meaning categories. The organization of these categories along the various dimensions, however, was noted to be somewhat different for both groups.

One difference was in the abilities of each group to classify phenomena. The high group was distinguished by a slightly greater number of classification categories which also tended to be of a higher order than those used by the low group. The high group was capable of a comparatively high degree of abstraction and logical organization while the low group appeared not to have cognitively processed the information. The high group

was more able to mediate meaning without a direct and immediate dependence on sensory and experiential data.

The use of a relational type approach to meaning which abstracted among stimulus relations characterized the high group while the low group depended more on relationships among personal referents.

Although the item analysis, matrices of proportion and multi-dimensional scaling all seem to point to a higher level of semantic maturity for the high group, it would seem that both groups are inefficient in their organization of meaning categories. While both groups are capable of classification, they both choose lower level categories requiring little or no abstraction or logical organization.

It would appear then, that the two context groups, although containing a number of differences, do not evidence significant differences in the dimensions of their semantic space. The differences observed appear to be those of degree rather than those of kind.

Chapter 5

SUMMARY, CONCLUSIONS, IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

SUMMARY

The main purpose of this study was to compare the contextual processing efficiency of two groups of grade six students with the dimensions of their semantic space.

The sample consisted of one hundred and fifty-eight grade six students who attended four of the Edmonton public schools during the school year of 1974-1975.

All one hundred and fifty-eight students were administered the F.W. Test of Sentences and Paragraphs (Laing, 1974). Those sixty students who scored most highly were considered to be efficient processers of the context and labeled as the "high group". Those remaining sixty students who scored lowest were considered to be less efficient processers of the context and were labeled as the "low group".

The same students were administered the S.F. Test (Evanechko, 1970). On the basis of the pre-established grouping of the sample into efficient and less efficient processers of context, a statistical analysis was made of

the responses of each group to the S.F. Test. These results yielded two group models of semantic functioning which were used to compare with the contextual processing efficiency of each group.

FINDINGS AND CONCLUSIONS

Hypothesis

> Learners who score low on contextual processing efficiency (as expressed by their response to the F.W. Test) do not differ significantly from those who score high with regard to their semantic sophistication as expressed by their responses to the S.F. Test.

The hypothesis was accepted since an analysis of the four dimensions making up the meaning space of the high group did not indicate the presence of more adequate meaning categories than those chosen by the low group.

It should be noted that the author, in accepting the hypothesis, did so mainly on the basis of the results obtained from the multi-dimensional scaling technique. This form of statistical analysis, if it were to show a marked dissimilarity between the two groups would require that the high group have a preponderant number of classification type meaning categories as compared to a large number of experience related meaning categories for the low group. Although there may well have been differences in the semantic sophistication of the two groups, this could not be stated as a result of the results obtained from the S.F. Test.

Discussion

The findings of this investigation with regard to the Hypothesis indicate that the dimensions forming the meaning space of the "high group" did not sufficiently differ in semantic sophistication from the dimensions forming the meaning space of the "low group" to warrant the rejection of the Hypothesis. The evidence gathered in this study was not sufficiently conclusive to define the meaning space of the "high group" as significantly more mature than the meaning space of the "low group".

It can be said on the one hand that the "high group", when compared to the "low group" did in fact show a higher mean average for the S.F. Test when compared with three adult models (see TABLE 4.4). On the other hand this method was the least accurate of determining semantic sophistication used in the study.

In addition, it can be noted that of eleven meaning categories which were highly preferred by both groups, seven in the high group were more highly preferred. Of these, a number such as Generic Definition and Class Membership Implied were meaning categories which suggested greater semantic sophistication (see TABLE 4.5). Regarding the preference of categories it should be noted that the difference in number of choices was overall remarkably similar. It should also be noted that this is

according to Evanechko a very limited way to assess semantic sophistication.

The multi-dimensional scaling technique, considered by Evanechko to be the most indicative measure of semantic sophistication, revealed dimension loadings with both mature and less mature meaning categories. An overall assessment of the meaning categories which formed the four dimensions of the high and low groups did not indicate a markedly more sophisticated number of dimensions for the high group than for the low group.

LIMITATIONS

In addition to those limitations already outlined in Chapter 1, the following factors became apparent during the testing, which may tend to limit the applicability of the findings.

The length of the S.F. Test may result in less discrimination between test items toward the latter part of the test.

The subjective element in attributing semantic sophistication or lack of it on the basis of the loading of meaning categories may vary somewhat between investigators.

The F.W. Test is only one measure of contextual processing ability and does not investigate other facets of context use such as deriving unfamiliar words from

words from the context.

As pointed out by Evanechko (1970) the definitions used in the S.F. Test did not always use a context for the word. Statements of meaning space are limited in as much as they do not account for those changes in semantic space that occur under the influence of situational and linguistic context.

IMPLICATIONS

Because the evidence of the present study did not strongly distinguish between the semantic space of the two groups, the following implications must remain tentative and also must suggest the need for further research.

The present investigation suggests the need for further research dealing with those background factors such as their repertoire of words or life experiences which influence a person's use of language. Such information would be helpful in explaining why people have different levels of language competence.

An investigation into the discrepancy between language competence and language performance would be helpful in determining the value of investigative instruments which make generalizations about student language ability by assuming that the response of the student to such an instrument is a true expression of

his day-to-day language use.

The present research suggests that there is a need for greater knowledge concerning the quality of vocabulary. Is it developmental, and if so, in what ways?

The present investigation raises questions concerning the practical value of the notion of Semantic Space. Because of the complex nature of this idea which leaves so much of the interpretation of the data to the judgement of the investigators, questions arise as to how much fruitful empirical research can arise from a construct so difficult to apply. If one is not simply to trust in the sound judgement of the investigator, there appears to be a need for a simplification of the S. F. Test, and a further development of the idea of Semantic Space to make it a more productive concept for researchers in the area of vocabulary development. The present investigation seems to imply that further research using the concept of Semantic Space as now designed will lead to limited practical use in the improvement of classroom teaching or curriculum development.

SUGGESTIONS FOR FURTHER RESEARCH

A similar study might be carried out at a higher grade level to compare contextual use and corresponding semantic space within that grade level or between two different grade levels.

A study might be carried out to investigate a student's ability to use the context to obtain "unfamiliar" word meaning and compare this ability with the composition of his semantic space.

A study might be carried out to compare a student's processing efficiency and semantic space using different instruments to measure context use and semantic sophistication.

A context study might be designed which controls for such factors as syntax and semantic unit. This would allow the investigator to be more precise in describing the efficiency of context use.

An instrument might be designed which is able to both index semantic functioning and measure the efficiency of context use by using a paired comparisons format involving embedded context clues.

A replication of the present study might lead to more conclusive data regarding contextual processing efficiency and corresponding semantic space than was available in the present study.

CONCLUDING STATEMENT

This study has investigated the semantic space of two types of readers -- those who were able to process the context efficiently and those who were unable to do so. The findings were not sufficiently conclusive to consider the efficient processers of context as having a semantic space significantly more mature than the readers who were less efficient processers of the context.

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APPENDIX A

F.W. TEST - SENTENCES AND PARAGRAPHS

WHAT IS THE MISSING WORD?

NAME _____ DATE _____

GRADE _____ SCHOOL _____

Directions:

In each of the following sentences there is a word missing as indicated by the blank space. You are asked to decide what the missing word should be in order to complete the sentence. Try to think of a word that fits best and gives meaning to the sentence.

Here is an example:

Patricia began to WORK hard when she realized that the others had finished, and were ready to go out on the playgrounds for a game of dodge ball.

The word "work" fits best because, according to the rest of the sentence, it appears that the "others" have been working since they have finished and can now go out and play. If Patricia wants to play, she will also have to work.

Now, try this one on your own. When you have finished, we will check it together. Complete the following sentence by filling in the blank with one meaningful word:

On Aunt Mary's countenance there is always a _____ but poor Uncle Jed's face never loses its frown.

Sentences - Part I

Complete each of the following sentences by supplying the missing word in the blank space provided:

1. After a long day at the beach the older folks were _____ to go home, but the children begged them to stay longer.

2. When the temperature in the sky rises to around freezing, flakes of _____ form and fall to cover the earth.

3. The trip home was _____, for there were no storms, no wild animals emerging from the mountain-sides, and few unfamiliar license plates to identify on passing motor cars.

4. Even though John ate a hearty breakfast, he was extremely _____ by ten o'clock.

5. As the flames leaped around him, Bob tried _____ to open the door by putting all his weight against it and kicking it hard, but to no avail; it would not budge.

6. Our family pet, a long-haired poodle -- wise and adorable, knowing and _____ -- travels in the car with us on every trip, long or short.

7. Instead of asking his uncle for _____, young Jans acted as if he had done no wrong.

8. The skater's _____ was almost perfect, for he made few errors in any of the figures required at the Winter Games.

9. Sugars and starches _____ the body with necessary energy to keep us working, thinking, and enjoying life; that is, they provide basic life-giving needs.

10. _____ we knew what to expect from Francis, but sometimes he was unpredictable.

11. No one breathed _____ until the wandering lion was safely back in his circus cage.

12. Fresh vegetables are _____ (conveyed in large vans) to the local market at least twice a week.

13. At first the chipmunk was cautious and shy, but gradually he became _____ and friendly.

14. As Robin _____ left his home, he wistfully looked back, and then sorrowfully set out to seek a new life in a new country.

15. If it continues to rain all night, the highways will be too _____ for safe travel by morning.

16. That band of leather or metal strapped around a dog's neck, often irritating yet glamorous with its silver studs and sparkling jewels, is usually called a _____, although it might better, at times, be named a choker.

17. Objects move only when a _____ (a push or a pull) acts upon them.

18. King Albion _____ his kingdom for over twenty-five years.

19. If you wish to _____ in your chosen career, you must be prepared to work hard.

20. A small quantity of _____, or venon, was taken from the rattler and injected into a rabbit to find out how it would react.

21. In our country most trees are completely _____ until they foliate in the spring.

22. Hastily the boys _____ to the police that they had seen a man who closely resembled the wanted bank robber, pictured in last night's paper.

23. Canada is _____ in natural resources; that is, we have a good supply of minerals, waters, and forests.

24. Because he had waited so long for the big day to arrive, Freddy now moved _____ into action.

1. Although snakes are usually considered evil creatures, some people like to keep them as _____.

2. When Johnny disturbed the class, the teacher had to _____ him.

3. At the hockey game everyone was _____ for the home team of Loxville.

4. Mary was _____ when she first moved to Toronto and found herself among so many strangers and away from her friends.

5. It was a very _____ evening; the children were all in bed, the wind had ceased its constant, irritating thrusts, and even the birds were content to enjoy the silence of the June evening.

6. Because it was after midnight, Bob and Joe crept _____ up the stairs to their bedroom.

7. The fatal _____ occurred at a sharp curve in Number 9 Highway.

8. Aunt Mamie _____ dogs if they were dirty; but she enjoyed them if they were clean and not too barky.

9. Mr. Smith's class in science was so thoroughly fascinated, so completely absorbed, and so _____ involved in their experiments that they failed to hear the bell ring.

10. Because it was a very cold night, we truly _____ Mr. Fraser's offer of a ride to the hockey game.

11. Mary recognized the first tune played by the school band, but the next two were _____ to her.

12. When you are _____ badminton -- a game similar to tennis -- you use a great deal of energy.

13. Joseph had no feeling of _____, no ill-will, in his heart for his brothers who had wronged him.

14. A _____ can fly about safely in pitch blackness, even where there is not the slightest glimmer of light.

15. _____ the wind dashed huge waves against the frail little boat, tossing it and its crew of three frightened boys about in the stormy lake.

16. The _____ air, fresh and crisp and still at that early hour, gave Mr. Holt the vigor he needed for his long, tiring job.

17. As the dark clouds rolled away after the severe thunderstorm, a _____ of blue sky could be seen in the eastern sky.

18. We will meet you in the _____, the entrance hall of the Queen Anne Hotel.

19. _____, which are the hardened remains or traces of plants and animals, were often found on the prairies by early pioneers.

20. The wolf ate _____ until nothing was left of the white rabbit; tomorrow he would not be hungry at all.

21. Storm clouds, which had gathered earlier in the morning, had _____ by noon, leaving the sky clear.

22. Because he had almost forgotten his promise to be home by nine o'clock, Billy _____ left the skating rink.

23. Although Marie cut her hand severely on a _____ piece of glass, she did not cry.

24. The _____ around a magnet in which metal objects are affected is commonly known as the magnetic field.

Paragraphs - Part I

Directions:

In each of the following paragraphs one word has been omitted. Read the paragraph carefully and decide what the missing word should be in order to complete the intended meaning of the passage. Put the word in the blank space.

1. On a clear night you can see streaks of _____ flashing across the sky. These streaks are meteors. Some people call them "shooting stars". The best time to view meteors is after midnight, although you can see them in the early evening, too.

2. Jonathan was a very _____ young man. He was considered small-minded by those who knew him well. In fact, when his friends were especially annoyed with him, they openly called him piggish.

3. Reefs and small islands consisting of _____ are common in the South Seas. It has been formed from the skeleton of very small sea animals. In color it may be red or pink. Sometimes it is used for making jewellery.

4. Each time Frank urged Trixie toward the fence, she would suddenly limp as though she were lame. Frank felt certain that the horse was _____. As soon as they moved away from the fence, Trixie had no sign of a limp.

5. After three days with little or no food, the boys were happy to reach home. That evening they _____ themselves on the roast beef and apple pie that Mother had prepared for them. They felt like stuffed owls.

6. Like many great men, Sir Winston Churchill spent his later years painting and reflecting on past glories. He also wrote his _____. They were published, not in a single volume, but in several volumes. Sir Winston Churchill's autobiography probably records more facts and events, personally witnessed by this great man, than the life story of any other statesman in history.

Paragraphs - Part II

1. The painter put down his brush, wiped his hands on a cloth which had been dipped in turpentine, and stood back to examine his work. As he admired the _____ painted walls and ceiling, he felt rather proud. The old house was beginning to take on a "new" look.

2. Mary and John chatted freely for almost an hour. Then they _____ into silence. Both had suddenly remembered that this was the last time they would see each other for several months.

3. _____ Susan walked up the steps of the school. She had studied hard. Susan felt certain that she was prepared for the mathematics examination which Mr. James was giving them first thing in the period.

4. Early this morning _____ of a large shipment of drugs was made by the Mounted Police. When the plane landed, the Police were at the airport. Before the drug carriers were off the plane, they were spotted. Their luggage was searched and the fateful goods was found among their belongings.

5. Next winter it would be fun, indeed, to re-live the summer vacation by enjoying Father's pictures which he would project on a screen. Davy decided that he would add to that enjoyment by keeping a _____ of the most exciting events of the holiday. Each evening he would write a brief account of the most important things that they had seen and done that day.

6. George _____ found fault with the way his wife cooked his meals. It was not a matter of complaining once in a while, when for example, he might be overtired. It seemed that it had become a bad habit with George.

APPENDIX B

S.F. TEST, ANSWER SHEET AND EXAMINER'S MANUAL

THE SEMANTIC FEATURES TEST

NAME _____ _____
last first

GRADE _____ AGE _____ _____
years months

SCHOOL _____

TOWN STUDENT _____ COUNTRY STUDENT _____

FATHER'S OCCUPATION: _____

MOTHER'S OCCUPATION: _____

ADDRESS _____

DATE _____

SEMANTIC FEATURES TEST

Directions to the Student:

This is a test to find out how you look at the meanings of words. You will be given many pairs of statements made up of words and their meanings. These meanings will be of many different kinds. For example some words will be put together with their opposites, such as "hot - cold". Others will be matched with single words which could take their place, such as "car - automobile". Still others will be described, such as "skill - being able to do something well". There will be many other such statements. You will be asked to rank each pair of statements depending on how well you think the words on the left are described. These pairs are to be ranked by filling in the space on the answer sheet that stands for the word or statement you think is closer in meaning to the word it describes and leaving blank the space that stands for the word or statement you think is not as close. There is no one best way to answer these questions. We simply want to see what you think are the best ways of giving meanings of words. Remember you are to compare the different ways you can give meanings for words. Do not worry whether the word has a complete meaning since each word is described in a different way. Think only of the kind of meaning given for each word and choose the one which is nearer what you think the word means in each pair of statements.

Here is an example of what one ranking might look like:

TEST

1. a. ____ big - large

   b. ____ cone - like an ice-cream cone

ANSWER SHEET

1. [ ] b

Be sure to carefully fill in only one space for each question.

SAMPLE

You will be asked to do this test by placing marks on answer sheets. Here are some questions for you to use in practicing the marking of the answer sheets. Your teacher will check your marking.

TEST

1. a. ____ unwashed - dirty
   b. ____ yell - scream

2. a. ____ moving - stepping
   b. ____ poppy - daisy

51. a. ____ horseshoe - hard
    b. ____ rejoice - feel sad

52. a. ____ amaze - you amaze me
    b. ____ cowhide - comes from cattle

101. a. ____ satisfy - to fill the wishes of someone
     b. ____ skull - bones and skeleton

102. a. ____ travel - when you go someplace
     b. ____ better - goodness

ANSWER SHEET

1. a b	51. a b	101. a b	151. a b
2. a b	52. a b	102. a b	152. a b

1. a. ___ big - large
   b. ___ small - tiny

2. a. ___ hungry - starving
   b. ___ bird - robin

3. a. ___ fruit - apple
   b. ___ chair - table

4. a. ___ beets - peas
   b. ___ lemon - sour

5. a. ___ turtle - slow
   b. ___ hard - easy

6. a. ___ loud - soft
   b. ___ dog - bark

7. a. ___ baby - cry
   b. ___ sweep - floor

8. a. ___ throw - ball
   b. ___ bird - wing

9. a. ___ hand - finger
   b. ___ wall - floor

10. a. ___ arm - head
    b. ___ dog - bone

11. a. ___ farmer - tractor
    b. ___ orange - for eating

12. a. ___ envelope - for putting letters in
    b. ___ drink - a drink of water

13. a. ___ tap - a tap on the wall
    b. ___ apple - grows on a tree

14. a. ___ late - you can see by the clock
    b. ___ carry - heavy

15. a. ___ enjoy - fun
    b. ___ royal - strong

16. a. ___ modern - good
    b. ___ rule - to control people

17. a. ___ lengthen - make a thing longer
    b. ___ cones - from a pine

18. a. ___ bunk - it has two levels
    b. ___ bugs - beetles or flies

19. a. ___ farming - crops and animals
    b. ___ sharpen - sharpen the knife till it cuts well

20. a. ___ bitten - bitten by a snake
    b. ___ tickle - you make someone laugh

21. a. ___ selfish - all for yourself
    b. ___ scorch - burn

22. a. ___ cup - dishes
    b. ___ cone - like an ice-cream cone

23. a. ___ stool - a sort of chair
    b. ___ sipped - drank a little at a time

24. a. ___ notice - see and remember
    b. ___ steal - rob

25. a. ___ equal - same
    b. ___ vegetable - carrot

26. a. ___ good - better
    b. ___ knife - fork

27. a. ___ industry - factory
    b. ___ elephant - heavy

28. a. ___ necklace - earrings
    b. ___ wet - dry

29. a. ___ diamonds - expensive
    b. ___ hockey player - skate

30. a. ___ unhealthy - well
    b. ___ play - piano

31. a. ___ crocodile - swim
    b. ___ face - eye

32. a. ___ eat - apple
    b. ___ door - window

33. a. ___ book - page
    b. ___ cripple - crutch

34. a. ___ hand - leg
    b. ___ scissors - for cutting

35. a. ___ student - pencil
    b. ___ ring - ring the bell

36. a. ___ shotgun - for shooting
    b. ___ stove - found in a kitchen

37. a. ___ approach - approach the door
    b. ___ happen - did

38. a. ___ cartoon - found in comics
    b. ___ incorrect - bad

39. a. ___ listen - quiet
    b. ___ loosen - to make less tight

40. a. ___ immovable - strong
    b. ___ community - it has many people

41. a. ___ memorize - learn and remember something
    b. ___ seaman - ships and sailing

42. a. ___ fruit - from an orchard
    b. ___ enlarge - enlarge the hole with this shovel

43. a. ___ alphabet - A, B, C
    b. ___ unfasten - you undo something

44. a. ___ invent - invent a new machine
    b. ___ water - liquid

45. a. ___ unlock - when you open the lock
    b. ___ boar - a kind of pig

46. a. ___ pork - food
    b. ___ advice - helpful information

47. a. ___ refreshments - like something to eat
    b. ___ vacant - empty

48. a. ___ album - book for pictures
    b. ___ smile - laugh

49. a. ___ active - lively
    b. ___ sweater - jacket

50. a. ___ cool - cold
    b. ___ flame - hot

51. a. ___ animal - deer
    b. ___ hot - cold

52. a. ___ pipe - cigar
    b. ___ lion - roar

53. a. ___ whale - large
    b. ___ chew - gum

54. a. ___ strong - weak
    b. ___ shoe - heel

55. a. ___ rabbit - hop
    b. ___ pedal - handlebars

56. a. ___ wash - hands
    b. ___ baby - rattle

57. a. ___ tree - branch
    b. ___ acid - for eating things away

58. a. ___ collar - sleeve
    b. ___ believe - believe in it

59. a. ___ carpenter - nail
    b. ___ comma - placed in a sentence

60. a. ___ ankle - for joining foot to leg
    b. ___ prepare - ready

61. a. ___ borrow - borrow something from him
    b. ___ fantastic - dangerous

62. a. ___ farmhouse - where farmer lives
    b. ___ mention - talk to others about something

63. a. ___ sit - down
    b. ___ airline-- it has passenger planes

64. a. ___ unequal - bad
    b. ___ baggage - suitcases and packages

65. a. ___ shortly - happening in a little while
    b. ___ shiver - shake and shiver in the cold

66. a. ___ bait - it attracts animals
    b. ___ brag - you talk about yourself

67. a. ___ furniture - chairs or tables
    b. ___ basketball - game

68. a. ___ beyond - he went beyond the fence
    b. ___ arctic - like the north

69. a. ___ convince - you talk a person into believing
    b. ___ alphabet - set of letters

70. a. ___ perch - a fish
    b. ___ adult - grown up

71. a. ___ bomber - a kind of large airplane
    b. ___ damp - wet

72. a. ___ gizzard - bird's second stomach
    b. ___ furniture - sofa

73. a. ___ usual - regular
    b. ___ icecube - cold

74. a. ___ comfortable - very satisfied
    b. ___ tall - short

75. a. ___ building - skyscraper
    b. ___ cat - purr

76. a. ___ statue - painting
    b. ___ eat - bread

77. a. ___ mouse - small
    b. ___ bicycle - wheel

78. a. ___ old - young
    b. ___ headlight - brake

79. a. ___ bandit - rob
    b. ___ soldier - rifle

80. a. ___ wear - blouse
    b. ___ blanket - for covering

81. a. ___ house - window
    b. ___ brighten - brighten the color

82. a. ___ foot - knee
    b. ___ farmyard - land surrounding a farmhouse

83. a. ___ shoemaker - boots
    b. ___ belong - yours

84. a. ___ bumper - for protecting a car
    b. ___ certain - good

85. a. ___ beautify - beautify the room
    b. ___ amuse - make smile and laugh

86. a. ___ pianist - plays in a band
    b. ___ bumper - part of car

87. a. ___ deceive - receive
    b. ___ cosmetics - lipstick and powder

88. a. ___ unprotected - weak
    b. ___ shrink - shrink it down to size

89. a. ___ arrest - to take prisoner for wrongdoing
    b. ___ brave - when you show courage

90. a. ___ stub - part of ticket
    b. ___ beetle - insect

91. a. ___ crime - stealing or killing
    b. ___ dictionary - sort of a word book

92. a. ___ dock - dock the ship at the pier
    b. ___ canal - man-made river

93. a. ___ drift - when you float along
    b. ___ troubled - worried

94. a. ___ window - glass
    b. ___ bold - very brave

95. a. ___ bulldog - a kind of dog
    b. ___ farm - field

96. a. ___ grandparents - parents of parents
    b. ___ oats - wheat

97. a. ___ awkward - clumsy
    b. ___ deep - shallow

98. a. ___ good - expert
    b. ___ hunter - shoot

99. a. ___ fish - salmon
    b. ___ blow - harmonica

100. a. ___ pistol - rifle
     b. ___ foot - toe

101. a. ___ plains - flat
     b. ___ hoof - tail

102. a. ___ early - late
     b. ___ pilot - airplanes

103. a. ___ horse - gallop
     b. ___ stereo - for playing records

104. a. ___ paint - picture
     b. ___ arrange - arrange all the pieces

105. a. ___ flashlight - battery
     b. ___ bomb - dropped on targets in battle

106. a. ___ propeller - motor
     b. ___ bitter - sour

107. a. ___ doctor - drug
     b. ___ great - strong

108. a. ___ bank - for saving money
     b. ___ moan - to make a low sound as in pain

109. a. ___ assemble - assemble the parts
b. ___ fishhook - it is attached to a line and rod

110. a. ___ suitcase - found in trains and planes
b. ___ merchant - buys and sells

111. a. ___ bright - light
b. ___ sneak - quietly sneak away

112. a. ___ harmless - soft
b. ___ blast - something which explodes at you

113. a. ___ combine - put things together in groups
b. ___ chisel - tool

114. a. ___ egg - from a chicken
b. ___ globe - like a ball

115. a. ___ romance - love and kisses
b. ___ glance - look at quickly

116. a. ___ soften - pound the piece to soften it
b. ___ breezy - windy

117. a. ___ vanish - you see it disappear
b. ___ trained - highly educated

118. a. ___ giraffe - animal
b. ___ planet - Mars

119. a. ___ elastic - like rubber
b. ___ ring - bracelet

120. a. ___ nostril - opening in the nose
b. ___ skeleton - brittle

121. a. ___ uncooked - raw
b. ___ insect - crawl

122. a. ___ slim - skinny
b. ___ report - news

123. a. ___ science - chemistry
b. ___ eyelid - eyelash

124. a. ___ lantern - flashlight
b. ___ fins - gills

125. a. ___ icebox - cold
b. ___ pupil - scribbler

126. a. ___ serious - funny
b. ___ camera - for taking pictures

127. a. ___ baby-sitter - watch
b. ___ attach - attach the ends together

128. a. ___ shorten - dress
b. ___ electricity - carried by wires

129. a. ___ ship - anchor
b. ___ hard - rock

130. a. ___ window - roof
b. ___ pleasing - soft

131. a. ___ baker - bread
b. ___ murmer - whisper to someone

132. a. ___ galoshes - for wearing on your feet
b. ___ sparkplug - it has to do with the motor

133. a. ___ attract - attract his attention
b. ___ sculpture - statues or stone animals

134. a. ___ scientist - works in a laboratory
b. ___ stolen - stolen by robbers from the bank

135. a. ___ high - up
b. ___ wade - you walk in the water

136. a. ___ playful - good
b. ___ cinnamon - flavoring

137. a. ___ openly - do in plain sight
b. ___ grove - like a small woods

138. a. ___ fuel - it burns in a stove
b. ___ blink - open and close eye quickly

139. a. ___ community - people and homes
b. ___ disgraceful - shameful

140. a. ___ support - it can support the weight
b. ___ jump - leap

141. a. ___ sign - you write your name
b. ___ flavoring - vanilla

142. a. ___ poplar - tree
b. ___ newspaper - magazine

143. a. ___ silvery - like silver
b. ___ peacock - colorful

144. a. ___ doughnut - small cake with hole
b. ___ splendid - awful

145. a. ___ hurriedly - speedily
b. ___ sing - song

146. a. ___ nice looking - beautiful
b. ___ body - belly

147. a. ___ footwear - slipper
b. ___ cup - bowl

148. a. ___ pencil - pen
b. ___ scientist - microscope

149. a. ___ mountain - immovable
b. ___ horse - for riding

150. a. ___ here - there
b. ___ beat - beat the others

151. a. ___ beaver - dive
b. ___ paddle - moves a canoe

152. a. ___ attack - enemy
b. ___ pleasant - happy

153. a. ___ shotgun - trigger
b. ___ disloyal - bad

154. a. ___ yolk - eggshell
b. ___ invent - develop something new

155. a. ___ logger - timber
b. ___ thunderstorm - it brings clouds and rain

156. a. ___ dice - for playing games
b. ___ dairying - milk and butter

157. a. ___ bravely - act bravely
b. ___ surrender - surrender or be caught and killed

158. a. ___ basement - goes under the house
b. ___ interfere - when you get in the way

159. a. ___ slow - turtle
b. ___ hippopotamus - animal

160. a. ___ dishonest - bad
b. ___ liquid - like water

161. a. ___ perform - to act out a part
b. ___ cider - apple juice

162. a. ___ playpen-- a baby's toys are found there
b. ___ singly - alone

163. a. ___ motor - gas and oil
b. ___ under - far below

164. a. ___ disobey - don't disobey, do as I say
b. ___ musical instrument - guitar

165. a. ___ eagerly - you act because you like it
b. ___ mosquito - fly

166. a. ___ mosquito - insect
b. ___ mystery - strange

167. a. ___ reflect - sort of give off light
b. ___ upward - downward

168. a. ___ coast - edge of land by an ocean
b. ___ housekeeper - cleans

169. a. ___ surely - definitely
b. ___ eyeglass - lens

170. a. ___ well - perfectly
b. ___ caboose - boxcar

171. a. ___ metal - gold
b. ___ sailor - ship

172. a. ___ scarf - mittens
b. ___ magnet - for picking up iron

173. a. ___ swamp - wet
b. ___ often - too often is too much

174. a. ___ somewhere - nowhere
b. ___ pebble - found lying on the ground

175. a. ___ blade - cut
b. ___ safely - home

176. a. ___ love - friends
b. ___ unafraid - good

177. a. ___ broom - handle
b. ___ practice - do again and again

178. a. ___ lung - heart
b. ___ cookbook - it has many recipes

179. a. ___ waiter - menu
b. ___ jewel - diamond or ruby

180. a. ___ saw - for cutting
b. ___ thicken - thicken the gravy by adding more flour

181. a. ___ quote - quote the words
b. ___ perform - when you do something

182. a. ___ train - runs on rails
b. ___ mushroom - plant

183. a. ___ obey - yes
b. ___ memorize - sort of learn

184. a. ___ unborn - soft
b. ___ brand - special mark

185. a. ___ pretend - make-believe that something is real
b. ___ hard - difficult

186. a. ___ musician - he has an instrument
b. ___ gradually - at once

187. a. ___ jewelry - rings and bracelets
b. ___ human - boy

188. a. ___ through - it went through the window
b. ___ comma - period

189. a. ___ upstairs - when you climb the stairs
b. ___ germ - invisible

190. a. ___ pamphlet - book
b. ___ first - last

191. a. ___ lodge - like another home
b. ___ children - play

192. a. ___ aspirin - drug for curing headaches
b. ___ roam - road

193. a. ___ sadly - unhappily
b. ___ burner - oven

194. a. ___ idly - lazily
b. ___ jeweler - ring

195. a. ___ grandparents - grandfather
b. ___ eyeglass - for helping to see better

196. a. ___ red - green
b. ___ mash - mash it down

197. a. ___ cartoon - funny
b. ___ mathematics - working with numbers

198. a. ___ longer - shorter
b. ___ sadly - tear

199. a. ___ pickpocket - steal
b. ___ uncertain - weak

200. a. ___ celebrate - birthday
b. ___ earning - working to make money

201. a. ___ book - chapter
b. ___ shampoo - it has suds

202. a. ___ bulb - switch
b. ___ business - stores and garages

203. a. ___ thinker - ideas
b. ___ trample - crush and trample the grass down

204. a. ___ suitcase - for travelling
b. ___ elect - when you choose by voting

205. a. ___ begin - begin at the beginning
b. ___ moth - insect

206. a. ___ dock - where ship ties up
b. ___ grin - a kind of smile

207. a. ___ usually - quickly
b. ___ beaver - small furred animal

208. a. ___ confess - good
b. ___ again - once more

209. a. ___ refund - return money
b. ___ great - excellent

210. a. ___ education - it needs schools and teachers
b. ___ crowd - man

211. a. ___ juggle - toss and flip
b. ___ oranges - apples

212. a. ___ cheaply - buying cheaply saves money
b. ___ arctic - cold

213. a. ___ wander - you walk here and there
b. ___ excellent - terrible

214. a. ___ apple - fruit
b. ___ cripple - limp

215. a. ___ clam - a kind of shellfish
b. ___ rejoin - group

216. a. ___ bomb - explosive material
b. ___ grain - oats

217. a. ___ whole - complete
b. ___ postmaster - mail

218. a. ___ often - hourly
b. ___ multiplication - for use in arithmetic

219. a. ___ flower - rose
b. ___ blind - a blind person

220. a. ___ breakfast - supper
b. ___ here - in this place

221. a. ___ hail - cold
b. ___ believe - tell

222. a. ___ later - earlier
b. ___ unexpected - good

223. a. ___ borrower - ask
b. ___ order - tell others to obey

224. a. ___ test - skills
b. ___ grain - from fields of crops

225. a. ___ violet - petal
b. ___ appearance - face and clothing

226. a. ___ trigger - barrel
b. ___ attack - soldiers attack the enemy

227. a. ___ plumber - wrench
b. ___ frequently - you do it often

228. a. ___ spool - for winding thread on
b. ___ oyster - shellfish

229. a. ___ blond - a blond girl
b. ___ jigsaw - a kind of puzzle

230. a. ___ iceberg - floats in the ocean
b. ___ bloodhound - breed of dog

231. a. ___ gleam - bright
b. ___ frequently - often

232. a. ___ unclean - bad
b. ___ long - stretched out

233. a. ___ outstanding - important work
b. ___ dog - collie

234. a. ___ knife - it has a blade
b. ___ cap - hat

235. a. ___ flavoring - vanilla and strawberry
b. ___ cliff - rocky

236. a. ___ finally - at last he finally went
b. ___ perfectly - poorly

237. a. ___ completely - you finish your work
b. ___ fire - burn

238. a. ___ daffodil - flower
b. ___ graze - grass

239. a. ___ rodeo - a kind of contest
b. ___ stream - rapids

240. a. ___ whisper - soft sound
b. ___ engine - boxcar

241. a. ___ seldom - not often
b. ___ shingles - for covering a roof

242. a. ___ trot - gallop
b. ___ bloody - a bloody knife

243. a. ___ direction - south
b. ___ branch - where the river divides

244. a. ___ doughnut - muffin
b. ___ crazily - dance

245. a. ___ liguid - wet
b. ___ unexplored - dangerous

246. a. ___ sooner - later
b. ___ quit - to stop

247. a. ___ stream - gurgle
b. ___ cobweb - from a spider

248. a. ___ crack - egg
b. ___ mine - dig and burrow

249. a. ___ envelope - flap
b. ___ forward - moving forward he advanced

250. a. ___ page - cover
b. ___ yawn - you open your mouth sleepily

251. a. ___ Indian - tomahawk
b. ___ submarine - ship

252. a. ___ blotter - for drying ink
b. ___ speedily -- sort of quickly

253. a. ___ bold - a bold man
b. ___ garage - a building for cars

254. a. ___ bracelet - hangs at the wrist
b. ___ cheerfully - happily

255. a. ___ swift - fast
b. ___ soon - immediately

256. a. ___ love - good
b. ___ dessert - pie

257. a. ___ roam - to wander about
b. ___ shoes - boots

258. a. ___ iceberg - from a glacier
b. ___ cracker - crisp

259. a. ___ skeleton - bones and skull
b. ___ singly - as a group

260. a. ___ generally - generally it is so
b. ___ dice - roll

261. a. ___ sometimes - you do it now and then
b. ___ bake - bread

262. a. ___ grizzly - bear
b. ___ triangle - angle

263. a. ___ horsefly - sort of a large fly
b. ___ handle - spout

264. a. ___ lullaby - song for putting a baby to sleep
b. ___ banker - money

265. a. ___ gradually - slowly
b. ___ brand-new - a brand-new car

266. a. ___ badly - terribly
b. ___ sliver - sticks in your finger

267. a. ___ game - football
b. ___ thirsty - hungry

268. a. ___ bulldog - husky
b. ___ unkind - hard

269. a. ___ runway - long
b. ___ sufficiently - having done enough

270. a. ___ silently - noisily
b. ___ cider - from apples

271. a. ___ antelope - leap
b. ___ boating - sailing or rowing

272. a. ___ borrow - money
b. ___ boost - boost it up to the top

273. a. ___ album - picture
b. ___ gladly - you do something because you want to

274. a. ___ pocket - button
b. ___ vest - suit

275. a. ___ teacher - chalk
b. ___ opera - a kind of music

276. a. ___ ambulance - for carrying sick people
b. ___ lumber - wood for building

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276 a b

EXAMINER'S MANUAL

THE SEMANTIC FEATURES TEST

by

Peter O. Evanechko

Testing Cautions

1. Marking IBM Answer Sheets. The examiner should note the instructions for use of these forms which are printed at the top of the sheet and be sure that students are fully aware of these instructions. It is particularly important that an HB pencil be used, that all marks are placed carefully between the guidelines and that no stray marks are made. Only one blank should be filled for each item and erasures should be done so that no mark remains for the electronic scoring machine to sense.

Students should be instructed to fill in the identification blanks at the top of each answer sheet as well as on the test booklet.

Care should be taken not to mutilate the answer sheets and upon completion of the test, the sheets should be placed within the test booklet and turned in to the examiner.

2. Caution Against Coaching. In order to encourage the best performance from a test group, the examiner should be sure that all students understand clearly what they are to do and the manner in which they are to record their responses. In assisting them, however, the examiner must remember that this is a testing situation and in no way should assistance with responses be given for any items except the samples. Assistance with mechanical acts such as finding the right number are quite permissable.

3. Irregularities During Testing. Testing may be invalidated by unforseen irregularities. It is recommended that the examiner note in writing irregularities in the test situation involving individual pupils or the group as a whole.

4. Completion of the Test. In forced-choice tests, such as this, it is essential that the students respond to all items in order that each item is ranked an equal number of times. Thus, the examiner should make sure that subjects do not leave out questions. The examinees may be reminded during the course of the examination that it is their own reaction that is required and that they should differentiate between each pair of items applying their own criteria.

5. Effect of Test Format. The forced-choice ranking format of the test may be quite new to the students, thus the examiner should familiarize the examinees with it to avoid confusion among subjects. Furthermore, the fact that there is no keyed correct response should be emphasized.

PART I

TEST MATERIALS

Two hundred seventy-six pairs of pairs or sets of logico-semantic relationships will be presented for ranking by the Ss. These sets represent the pairing of each of the 24 semantic relationships found to exist in children's cognitive behavior with every other relationship. The task of the Ss will be to rank the items in the sets in terms of their importance to them for achieving meaning of a verbal stimulus.

Children's Meaning Categories

1. Synonym. The members of each word pair have exactly or very nearly the same referent:

   e.g. big - large
   steal - rob

2. Similarity. The members of each word pair are similar through being aligned on some dimension, with the referent of the right-hand member occupying a more extreme position on this dimension:

   e.g. small - tiny
   hungry - starving

3. Superordinate. The left-hand member denotes a common class of which the right-hand concept is a member:

   e.g. bird - sparrow
   fruit - apple

4. Coordinate. The members of each pair refer to familiar members of a familiar class:

   e.g. chair - table
   beets - peas

5. Attribute. The right-hand member of each pair refers to a quality or attribute generally recognized as characterizing the object denoted by the left-hand member:

   e.g. lemon - sour
   turtle - slow

6. Contrast. The members of each word pair refer to opposite ends of a continuum:

e.g. hard - easy
loud - soft

7. Action-of. The right-hand member of each pair is an intransitive verb denoting concrete action associated with and performed by the agent referred to by the left-hand member:

e.g. dog - bark
baby - cry

8. Action-upon. The left-hand member of each pair is a transitive verb denoting a concrete action associated with and performed upon the object referred to by the right-hand member:

e.g. sweep - floor
throw - ball

9. Whole-part. The right-hand member of each pair refers to a familiar object recognized as an important part of a familiar whole denoted by the left-hand member:

e.g. bird - wing
hand - finger

10. Part-part. The members of each pair refer to familiar objects which are parts of a familiar whole:

e.g. wall - floor
arm - head

11. Common use. The right-hand member of each pair denotes an object associated with and acted upon by the agent referred to by the left-hand member:

e.g. farmer - tractor
dog - bone

12. Use of. The right-hand member of each unit denotes a use made of the left-hand member:

e.g. orange - for eating
envelope - for putting letters in

13. Repetition. The right-hand member of each unit is a repetition of the concept referred to by the left-hand member:

e.g. drink - a drink of water
tap - a tap on the wall

14. Contiguity. The left-hand member of the unit is defined by direct concrete interaction of place, time or activity with the right-hand member:

e.g. apple - grows on a tree
late - you can see by the clock

15. Free association. The members of the unit are free associates:

e.g. carry - heavy
enjoy - fun

16. Connotation. The right-hand member of each pair connotes a relationship with the left-hand member:

e.g. royal - strong
modern - good

17. Analysis. The right-hand member is an analysis of the left-hand member indicating certain dimensions of function of this concept:

e.g. rule - to control people
lengthen - make a thing longer

18. Synthesis. The right-hand member defines the left-hand member by stating its relation with other concepts commonly associated with it:

e.g. acorns - from an oak tree
bunk - it has two levels

19. Extension of a class (Implication). The right-hand member of the unit gives examples of concepts to which the left-hand member might refer implying a degree of familiarity with the concept:

e.g. bugs - insects and flies
farming - crops and animals

20. Denotation in Context. The left-hand member is defined by use in context:

e.g. sharpen - sharpen the knife till it cuts well
bitten - bitten by a snake

21. Ostensive Definition. The right-hand member defines the left-hand member largely on the basis of experience:

e.g. tickle - you make someone laugh
selfish - all for yourself

22. Generic Definitions. The right-hand member denotes the common class to which the left-hand member belongs:

e.g. kindle - burn
cup - dinnerware

23. Class membership implied. The right-hand phrase attempts to bridge the gap between general and specific by using phrases such as "a kind of," "sort of" or "like a":

e.g. cone - like an ice-cream cone
stool - like a chair

24. Intension of a class (Genus et Differentia). The right-hand member states the class as well as the distinguishing features of the left-hand member:

e.g. sipped - drank a little at a time
notice - see and remember

PART II

DIRECTIONS FOR ADMINISTRATION

This test is an experimental form of a vocabulary measure suitable for use at the upper elementary and secondary levels. The purpose of the test is to provide data on the student's ability to perceive and use certain kinds of semantic relationships. The nature and quality of these relationships will serve as an index of the quality of meaning and therefore the level of cognitive functioning the individual may achieve. It is, therefore, important that students respond naturally to the test, i.e., a normal classroom atmosphere be maintained. Students should be encouraged to work carefully but not to deliberate at length over the "best" response since there is no single best way of making the choices and it is the students' own reactions that are important. Also, the subjects should not be made to feel that this is a "final" examination or one which will determine their class standing but rather a diagnostic test to determine their competence in vocabulary.

Time Limits

There is no time limit for this instrument since it is not a speed test although all students should be able to complete the test within one hour. The total testing time may be broken up into one-half hour periods for elementary students and forty-five minute periods for secondary students. It is important that the subjects not be rushed and that they respond to every item.

Preparation For the Test

Before presenting the Semantic Features Test the examiner should become familiar with the test content and the marking of the answer sheets. The best preparation will be for the examiner to do part of the test while rehearsing the test situation.

It is equally important that all examinees be familiar with the nature of the test and the method used for marking test responses. A sample exercise is provided in the test booklet for this purpose and should be used and carefully discussed prior to the administration of the test. The accompanying IBM answer sheets should be carefully examined and their use indicated.

APPENDIX C

FINAL CONFIGURATION OF 24 POINTS IN 4 DIMENSIONS

FINAL CONFIGURATION - HIGH GROUP

	1	2	3	4
1	0.901	0.243	-0.388	-0.038
2	-0.160	0.324	0.163	-0.855
3	0.188	-0.525	0.184	-0.763
4	-0.626	-0.315	-0.524	0.485
5	-0.400	0.562	0.559	-0.255
6	-0.512	0.049	-0.973	-0.042
7	-0.077	0.668	0.266	-0.803
8	-0.936	0.164	-0.113	-0.324
9	0.295	-0.478	-0.752	0.177
10	-0.857	0.576	-0.286	0.237
11	-0.517	-0.690	0.273	0.255
12	0.613	0.010	-0.062	0.744
13	0.021	0.089	-0.568	-0.579
14	-0.062	-0.834	0.603	-0.341
15	-0.009	-0.873	-0.446	-0.256
16	-0.779	-0.235	-0.004	0.704
17	0.376	-0.350	0.967	-0.003
18	0.398	0.345	-0.707	0.532
19	0.151	0.894	-0.194	0.266
20	-0.268	0.240	0.329	0.496
21	0.525	0.424	0.309	-0.495
22	0.721	-0.475	-0.033	-0.292
23	0.355	0.490	0.676	0.340
24	0.660	-0.304	0.720	0.810

FINAL CONFIGURATION - LOW GROUP

	1	2	3	4
1	-0.006	0.193	0.717	0.356
2	-0.126	0.048	0.456	-0.900
3	-0.105	-0.666	-0.297	-0.760
4	0.063	0.413	-0.732	-0.318
5	-0.794	-0.119	0.158	0.524
6	-0.671	0.278	-0.801	-0.660
7	0.148	-0.931	-0.384	0.147
8	-0.843	0.577	0.095	-0.151
9	-0.311	-0.153	-0.415	0.731
10	-0.479	0.537	-0.524	-0.510
11	-0.150	-0.546	0.645	-0.346
12	0.312	-0.368	0.406	0.887
13	-0.109	0.704	0.257	-0.345
14	0.820	-0.488	-0.215	-0.034
15	-0.805	-0.522	0.256	0.091
16	-0.349	0.147	-1.175	0.152
17	0.870	0.019	0.210	-0.554
18	-0.033	0.318	0.771	0.580
19	0.175	0.922	0.319	0.395
20	0.585	0.169	0.399	-0.379
21	0.543	-0.573	-0.269	0.003
22	-0.222	-0.519	0.512	-0.068
23	0.430	0.301	-0.321	0.781
24	1.059	0.259	-0.066	0.377